MEDIVATORS®

DSD EDGE®

Endoscope Reprocessing System

Service Manual

System Version 5.65

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Intertek

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Chapter 1

INTRODUCTION

Using this Manual

This manual is for the MEDIVATORS® DSD EDGE® endoscope reprocessor. The manual describes the features of the reprocessor, how to setup and operate the reprocessor, and maintenance and troubleshooting procedures to keep the reprocessor in good operating order.

Throughout the manual are notes, service notes, cautions, and warnings. These provide additional important information. An example of each is illustrated below.

Indications for Use

MEDIVATORS DSD EDGE Endoscope Reprocessing System tests, washes, disinfects and rinses flexible endoscopes, such as fiberoptic and video endoscopes between patient uses. The DSD EDGE Endoscope Reprocessing System is indicated to provide high level disinfection, using RAPICIDE® PA High Level Disinfectant, of heat sensitive semi-critical endoscopes. Manual cleaning of endoscopes is required prior to placement in the DSD EDGE Endoscope Reprocessor system.

RAPICIDE PA contact conditions in the DSD EDGE Endoscope Reprocessor : 5 minutes - 30°C - 850 ppm peracetic acid

Note: A note refers to relevant information not covered in the main body of the text.

Service: A service note refers to operations or repairs only a trained service technician may perform.

Caution! A caution describes actions and conditions that may cause damage to or destruction of the equipment.

Warning! A warning describes actions and conditions that may cause severe personal injury or death to the operator or patient.

Safety

This section outlines general safety guidelines for proper operation and service of the reprocessor. Failure to follow these guidelines may result in severe injury or death to the patient and/or operator. Read and understand all operating and service procedures before attempting to operate the reprocessor. If the equipment is not used as specified, the protection by the equipment may be impaired.

Intended Use

Only properly trained individuals may operate or service the reprocessor. Never use the reprocessor for any purpose other than the manufacturer's specific intended purpose. It is the responsibility of the facility to maintain and ensure that adequate training is provided to operators. It is recommended that the facility conduct regular training of all personnel concerned with the operation and maintenance of this equipment, including emergency procedures for toxic, flammable or pathogenic material released into the environment. Attendance records of the training should be maintained and evidence of understanding demonstrated.

Operator Safety

Avoid biological contamination and chemical burns–always wear appropriate personal protective equipment when handling endoscopes or disinfectant solutions. Never open the reprocessor lid or remove the floating basin lid during operation.

Moving the DSD EDGE® Endoscope Reprocessor

Before moving the DSD EDGE Endoscope Reprocessor, ensure the electrical cord, drain line and water supply line are either disconnected or are appropriate lengths to accommodate the relocation of the machine. Failure to do so may result in damage to the machine. While moving the DSD EDGE Endoscope Reprocessor, ensure the machine remains in an upright position. Moving or resting the machine in any orientation other than an upright position may result in damage to the machine. For short distances, the DSD EDGE Endoscope Reprocessor may be slid upon it base. Take precautions to ensure the machine does not tip over which could result in damage to the machine or personal injury. For longer distances, the machine may be placed upon a dolly or pallet. When loading or unloading the machine onto or off of a dolly or pallet, utilize appropriate lifting equipment or manpower to avoid damage to the machine or personal injury.

Note: To avoid injury or death from an electrical insulation breakdown within the unit, the GFI (ground fault interrupter) circuit breaker should be checked for proper operation on an annual basis.

Note: If during the use of this equipment you see or smell smoke, immediately disconnect the unit from the power supply, discontinue use and call MEDIVATORS Technical Support at 1-800-444-4729.

Note: Prior to undertaking any service or maintenance operation, or when resetting the GFI ensure that the DSD EDGE® Endscope Reprocessor is disconnected from the main power supply. If service or maintenance operations are to be conducted on the water system, ensure that the DSD EDGE Endoscope Reprocessor is isolated from the main water supply.

Caution! The reprocessor does not have an on/off switch. Be sure the reprocessor is positioned so that the power cord or main circuit breaker is accessible at all times.

Warning! The reprocessor must be protectively grounded.

Installation and Maintenance

Proper maintenance will ensure effective disinfection and prolong the life of the reprocessor.

- The reprocessor must be protectively grounded.
- The disinfectant immersion period (contact time) is fixed at five (5) minutes.
- All pressure regulators are factory-preset. Do not adjust the settings. Contact your Technical Support representative for assistance.
- Do not allow the disinfecting solution to contact metal components.
- Do not use alcohol or alcohol-based products to clean the reprocessor cabinet.
- The hookups are not autoclavable and must be reprocessed by low temperature disinfection only.
- Replacement parts must be ordered from the manufacturer to maintain the warranty.
- Regularly inspect reprocessor for basin damage, pipe and tubing damage, which may result in leaks.

Water Quality and Filtration

Potable water is the minimum standard. Incoming water must be pre-filtered to a minimum of 0.45-micron at 35-40 psi at a flow rate of 3.2 gpm/min and a temperature of 95°F (±4°F) or 35°C (±2°C).

- The high performance 0.2-micron water filter included with the reprocessor is a bacterial-retentive filter. The filter removes all microorganisms and particles greater than 0.2-micron.
- The routine maintenance schedule recommends replacing the 0.2-micron water filter every 6 months or sooner, depending on the pre-filtration system and the quality of the incoming water.
- Incoming water supplied (upstream of the external pre-filtration system) should be shut-off at the end of every work day. Ensure that this water supply is turned on prior to operating the reprocessor.
- The DSD EDGE Endoscope Reprocessor is optionally supplied with a 2-stage pre-filtration system, refer to document 50097-363 for installation.
- The pre-filtration system should be monitored for excessive pressure drop indicating blocked filter membranes.

Chemicals

The DSD EDGE® Endoscope Reprocessor uses RAPICIDE® PA Part A and Part B peracetic acid disinfectant components to high level disinfect endoscopes. Refer to the American National Standard recommended practice titled, *Chemical Sterilants and High Level Disinfectants: A guide to Selection and Use* (AAMI TIR7:1999) and/or *Safe Handling and Biological Decontamination of Reusable Medical Devices in Health Care Facilities and in Nonclinical Settings* (AAMI/ANSI ST35:2003). The documents are available from the Association for the Advancement of Medical Instrumentation.

The DSD EDGE Endoscope Reprocessor also accommodates user specified detergents for endoscope washing and 70% Ethyl Alcohol and Isopropyl Alcohol for end-of-cycle endoscope drying.

For all chemicals used within the DSD EDGE Endoscope Reprocessor refer to the respective chemical labeling, directions-for-use (DFU) and/or material safety data sheet (MSDS) for chemistry constituents as well as for safety and handling guidelines. These documents should be displayed and stored near the DSD EDGE Endoscope Reprocessor for easy access in the event of a chemical spill or emergency resulting in contact with any chemical that is considered hazardous.

Detergent Solution

If the user decides to incorporate a pre-wash in the reprocessing cycle MEDIVATORS recommends the use of a detergent solution that has bacteriostatic properties to inhibit bacterial growth in the detergent reservoir and detergent line. The detergent should be low foaming and free-rinsing neutral in pH recirculation.

Caution! Never use household detergent in the reprocessor.

Disinfectant Solution

USE ONLY RAPICIDE PA Disinfectant.

Monitoring Disinfectant Potency

The disinfectant potency must be verified for each disinfection cycle. Use a peracetic acid test strip to verify that the retained disinfectant sample from the DSD EDGE® Endoscope Reprocessor sample port is above the minimum recommended concentration (MRC).

Endoscope Precleaning and Testing

All endoscopes must be manually precleaned prior to disinfection. Follow the endoscope manufacturer instructions and established professional guidelines to properly preclean the endoscope.

- Endoscopes with elevator wire channels require additional manual cleaning and disinfection steps.
- Leak test endoscopes prior to disinfection procedures.

Electromagnetic Compatibility

The DSD EDGE Endoscope Reprocessor meets all safety requirements of International standard IEC 60601-1-2 for medical electric equipment and is suitable for use in laboratory environments.

Caution! Portable and mobile communication devices can affect electrically-operated medical equipment.

Hookup Application Guide

A DSD EDGE Endoscope Hookup Application Guide has been provided with every unit purchased and an updated Hookup Application Guide can be acquired by contacting MEDIVATORS Customer Support at 1-800-444-4729 or from the internet by going to www.medivators.com.

Cleaning and Disinfection

Always follow established professional guidelines while cleaning and disinfecting endoscopes. The following organizations have published recommended guidelines.

Society of Gastroenterology
Nurses and Associates
401 North Michigan Ave.
Chicago, IL 60611-4267
TEL: (800) 245-7462
FAX: (312) 321-5194
http://www.sgna.org/

Association for Professionals in
Infection Control and Epidemiology, Inc.
1275 K Street, NW, Suite 1000
Washington, DC 20005-4006
TEL: (202) 789-1890
FAX: (202) 789-1899
http://www.APICinfo@apic.org

American Society for
Gastrointestinal Endoscopy
13 Elm Street
P. O. Box 1565
Manchester, MA 09144-1314
TEL: (978) 526-8330
FAX: (978) 526-4018
http://www.asge.org/

American Society for
Testing and Materials
100 Bar Harbor Drive
West Conshohocken, PA 19428-2959
TEL: (610) 832-9585
FAX: (610) 832-9555
http://www.astm.org/

Association of Operating
Room Nurses
2170 So. Parker Rd., Suite 300
Denver, CO 80231-5711
TEL: (303) 755-6304
FAX: (303) 750-3462
http://www.aorn.org/

Canadian Society of Gastroenterology
Nurses & Associates
P.O. Box 366
36 Adelaide Street East
Toronto, Ontario M5C 2J5
http://www.webray.com/csgna

British Society of Gastroenterology
3 St. Andrews Place
Regents Park, London NW1 4LB
01144-171-387-3534
BSG@mailbox.u2cc.ac.uk.

Chapter 2

INSTALLATION

General

This chapter describes the operator controls, and how to set up and program the reprocessor.

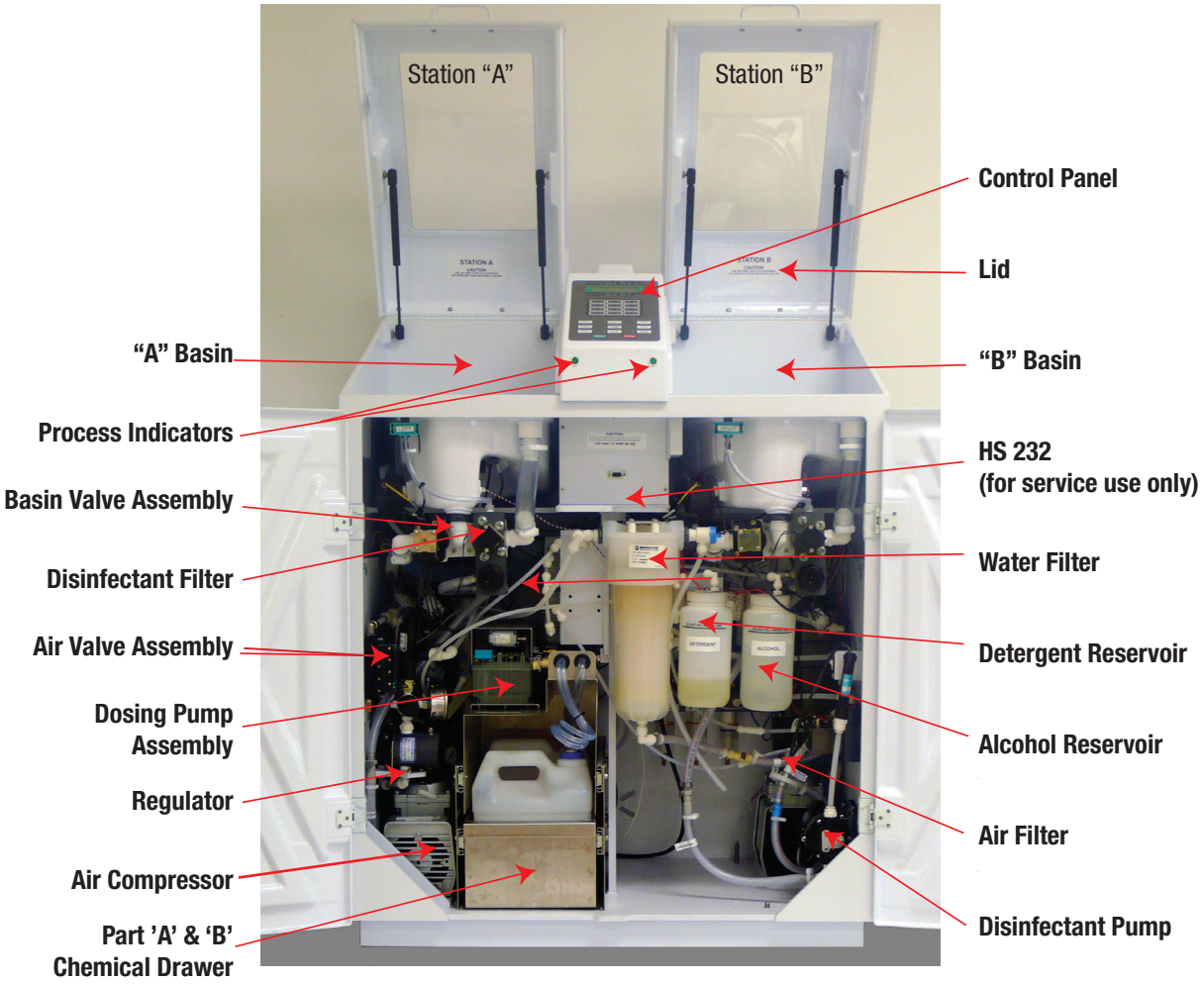


Figure 1 : DSD **EDGE® Endoscope Reprocessor** Internal components

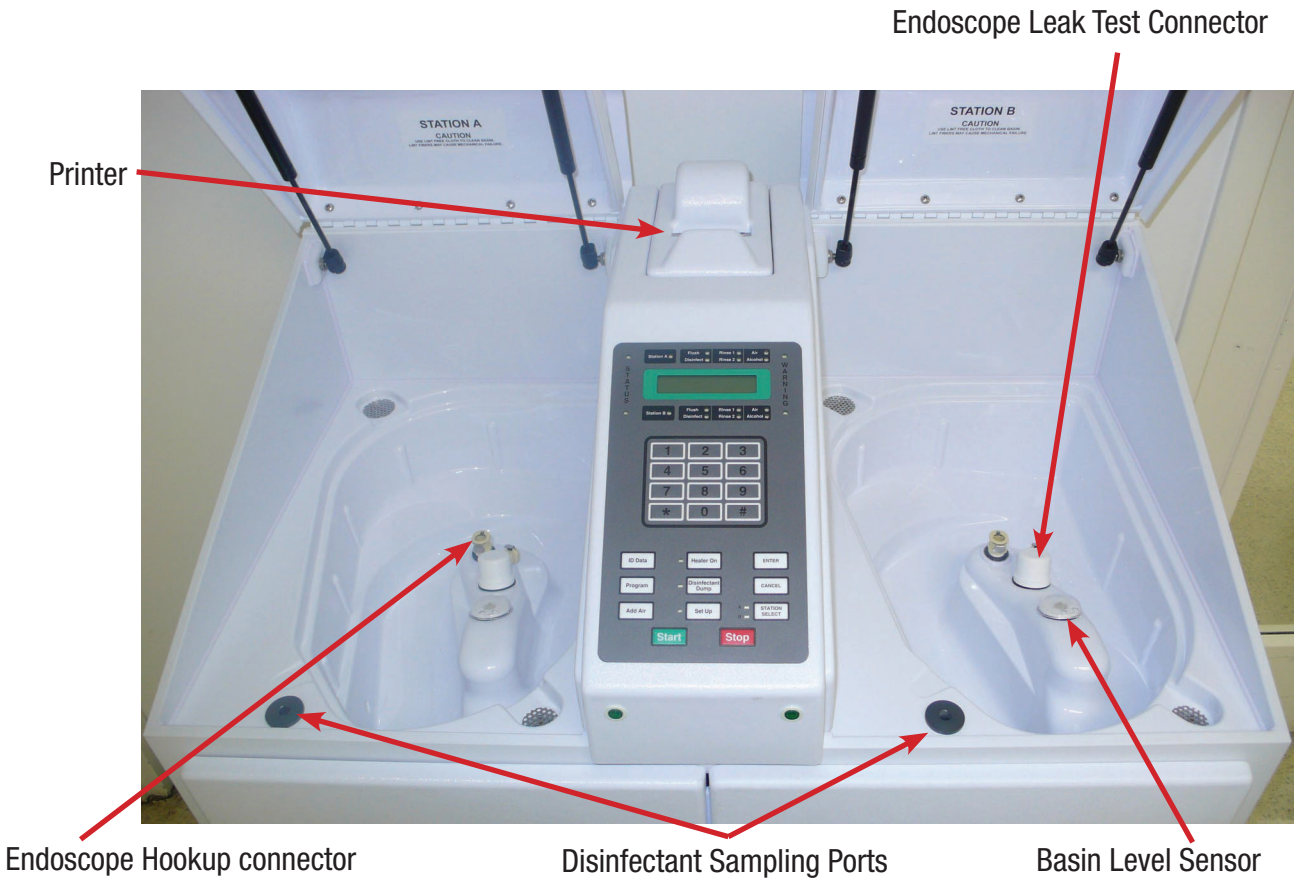


Figure 2: DSD EDGE® Dual Basin

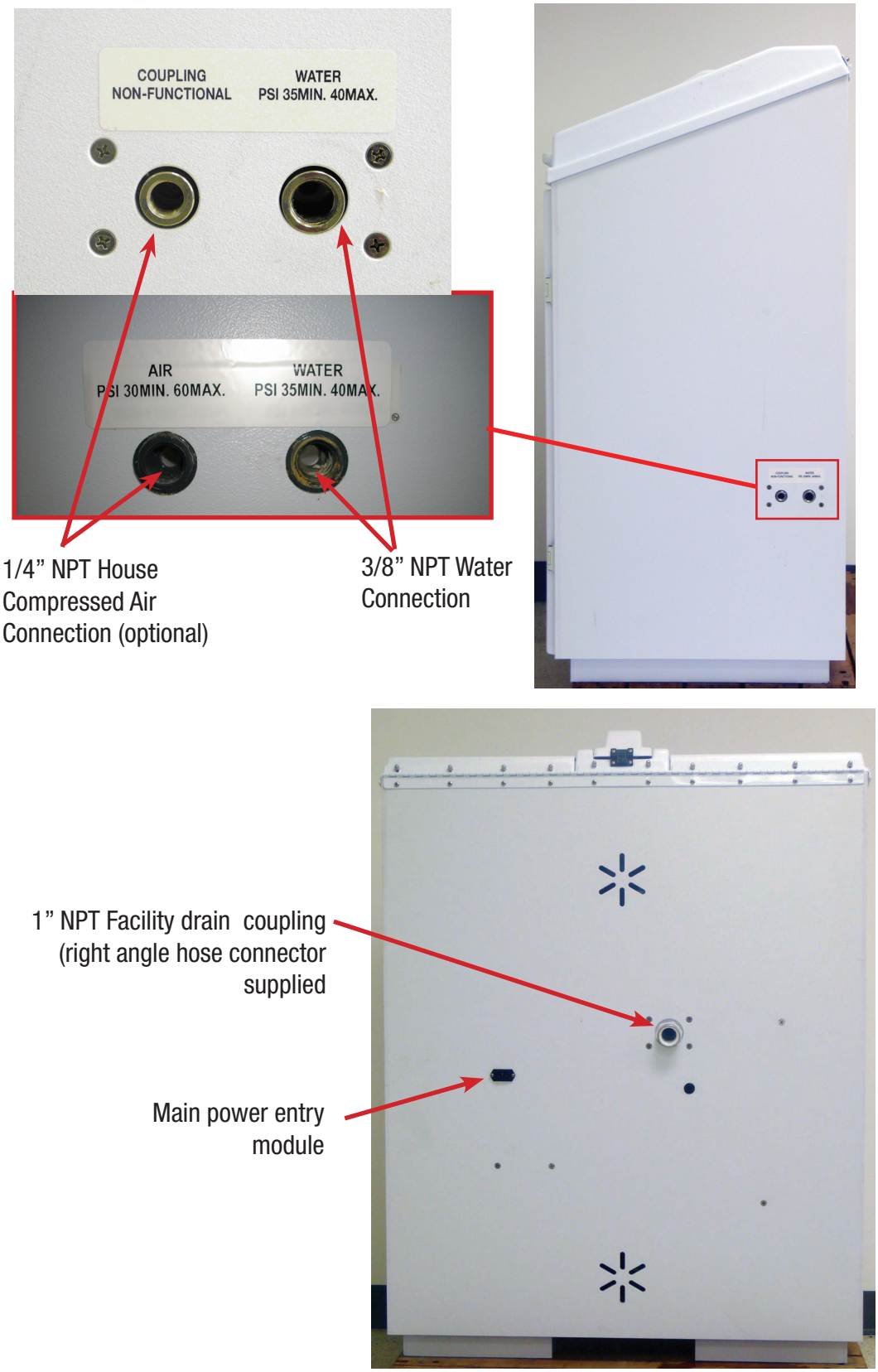


Figure 3: Side and back of DSD EDGE® Endoscope Reprocessor

System Supply

Water Supply

For optimum cycle performance, the water supplied to the reprocessor must provide a flow rate of 3.2 gal/min (12 liters/min), at 35-40 psi (2.4-2.75 bar). A hot and cold water supply requires the use of a tempering valve to maintain a water temperature of 95°C (±4°F) and 35ºC (±2ºC). The incoming water lines must be a minimum 1/2 inch (13 mm).

1. For the hot and cold supplies install an incoming water shut-off valve before the pre-filter system.
2. To maintain the proper water temperature, we recommend the installation of a thermostatic mixing valve. The valve has both hot and cold water plumbed into the unit, with an output of properly tempered water available on demand to the pre-filtration system of the reprocessor. We recommend one missing valve be installed per machine and that the mixing valve be installed no further than 4 feet from the filtration system and accessible to the operator.
3. Install the incoming water prefilter, supplied with the reprocessor.
   - Mount the incoming water filter on the wall where it can be periodically checked for particle saturation.

Note: The filter is provided with the outlet on the right side. If the filter installation requires the outlet to be on the left side, remove the filtration brackets and reinstall on the opposite side, then loosen and rotate the gauges, 180°.

4. Install the supplied water regulator between the pre-filter and the reprocessor water connection.
   - Incoming water pressure to the regulator must be less than 100 psi (6.8 bar).
   - Set the outgoing water pressure between 35-40 psi (2.4 - 2.75 bar).

Electrical Supply

Domestic reprocessors are supplied with a hospital grade, ground plug that can be connected to any standard 110-130VAC outlet. International reprocessors are supplied with a standard grounding European plug that connects to 220-240VAC outlets.

We recommend surge protectors be used for protection against power spikes and surges. The reprocessor must be plugged into or connected to a fused branched circuit.

Caution! The reprocessor does not have an on/off switch. Be sure the reprocessor is positioned so that the power cord or main circuit breaker is accessible at all times.

Warning! The reprocessor must be protectively grounded.

Air Supply

Compressed air is required (30 - 60 psi/2.1 - 4.1 bar). If you did not purchase the air compressor option with the reprocessor, be sure to make the compressed air connection to the labeled fitting on the side of the cabinet.

Warning! This air must be supplied from an oil free air source.

System Drain

The drain tube provided with the reprocessor consists of 36 inches of 1-inch diameter clear tubing. The drain tube must have 3 inches of drop (7.5 cm) or greater over the 36-inch length. The facility drain should be no higher than 18 inches to provide proper drainage. Consult your maintenance department for multiple reprocessor installation.

Caution! The reprocessor drain relies on gravity flow. There must be no low spots in the drain line. Fluid trapped in the drain line will interfere with free drainage and reprocessor function.

Installation Verification

Caution! Operating the 120VAC reprocessor without a hookup fitting might blow the 8-amp slow blow fuse. Operating the 230VAC reprocessor without a hookup fitting might blow the 4-amp slow blow fuse.

Refer to the Site Requirements and Installation Guide PN 50097-091.

Service: If the reprocessor cannot be verified, contact MEDIVATORS Technical Support at: 1-800-444-4729 or 1-763-553-3300.

Chapter 3

OPERATOR CONTROLS

General

This chapter describes the operator controls, and how to set up and program the reprocessor.

Control Panel

The control panel allows the operator to specify settings, view system messages, errors and warnings, and operate the reprocessor. This section describes each function of the control panel.

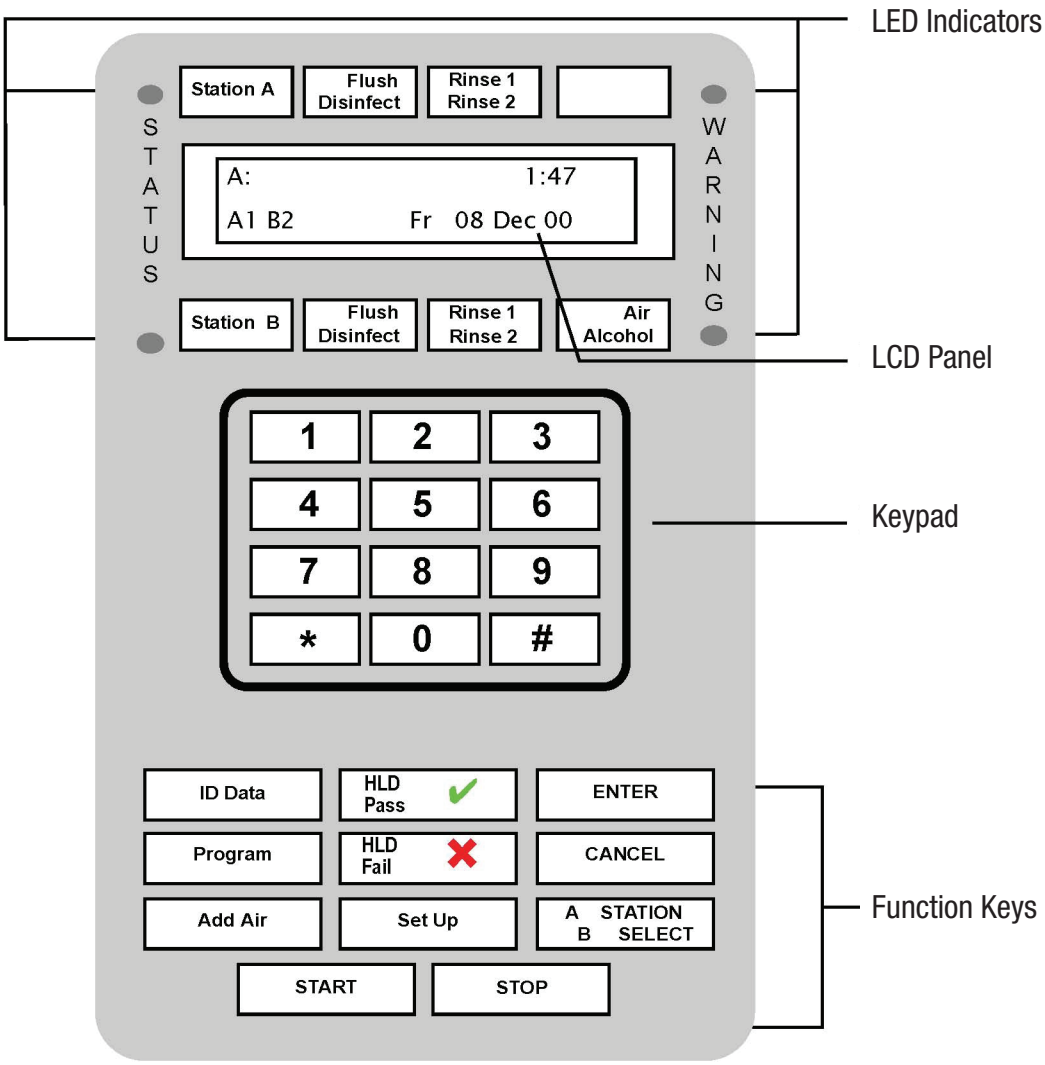


Figure 1 : Control Panel

LED Indicators

The LED indicators alert the operator to system functions and errors. There are four types of indicators used on the reprocessor control panel.

- **Status Indicators**
  The status indicators blink if an error occurs, or if the STOP button is pressed. The upper indicator identifies station A. The lower indicator identifies station B.
- **Station Indicator**
  The station indicator identifies that the disinfection station is in use. The LED illuminates when the station is in use.
- **Cycle Phase Indicators**
  The phase indicators identify which cycle phase the system is performing. The LED illuminates (or blinks) to indicate the present cycle phase.
- **Warning Indicators**
  The warning indicators alert the operator to system errors, or other conditions requiring immediate attention. The upper indicator identifies station A. The lower indicator identifies station B.

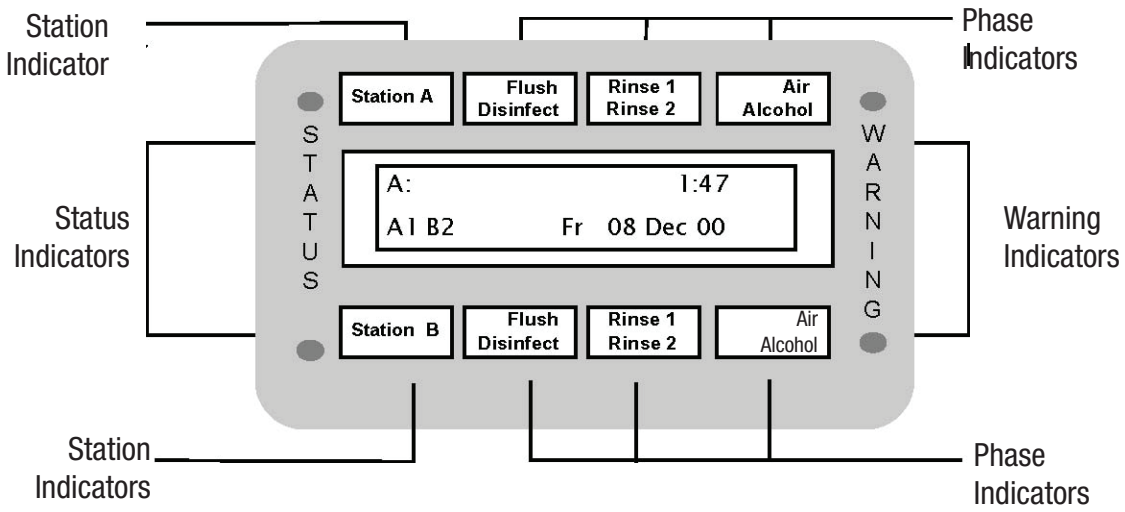
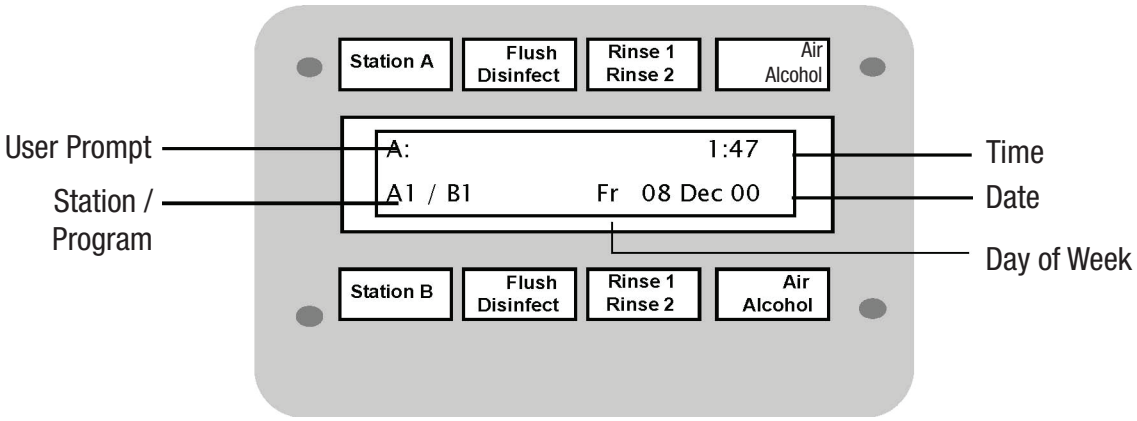


Figure 2 : Indicators

LCD Screen

The LCD screen displays system messages and prompts the operator during system setup.

- User Prompt displays messages and queries. “A:” represents station A, “B:” represents station B.
- Station/Program displays the current operating program.
- Program status indicators identify a station as “idle”, “stopped”, “resetting” or “running”.
  - Station stopped is indicated by alternating + and *.
  - Station running is indicated by alternating : and |.
  - Station resetting is indicated by alternating R and r.
  - Station idle has no indicator.



Program status indicators

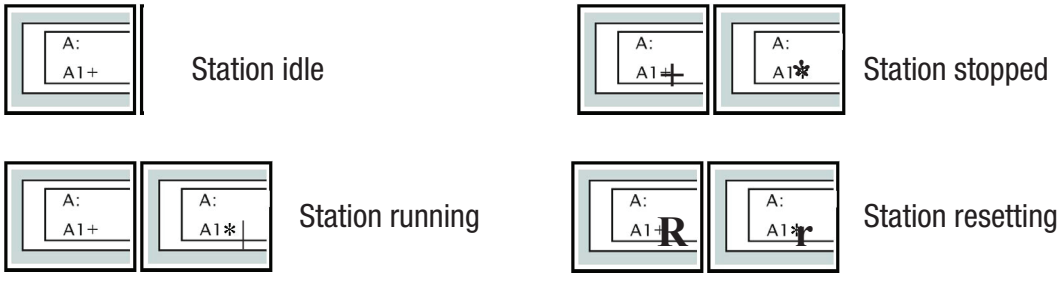


Figure 3 : LCD Screen

Numeric Keypad

The numeric keypad allows the operator to enter numeric information.

- The * key can also be used as a “Cancel” or a “Backspace” button.
- The # key can also be used as an “Enter” button.

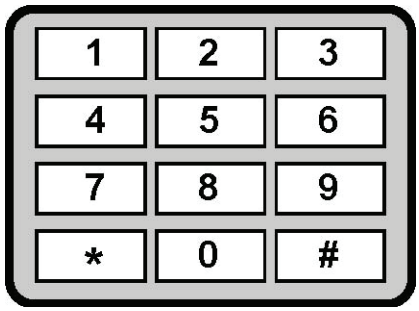


Figure 4: Numeric Keypad

Function Keys

The function keys control the operation of the reprocessor.

- ID Data
  Press this button to enter the endoscope identification or serial number, operator ID number, patient ID number, and physician ID number into the log. Each ID entry can contain up to ten digits. This function is only active when the station is idle.
- Program
  Press this button to select a disinfection program. Enter the program number on the keypad. This function is only active when the station is idle.
- Add Air
  When the station is idle press this button, then the START button to air purge the endoscope. Otherwise, this function will append an add air cycle to the end of the currently running cycle. Pressing the button again will remove the add air cycle.
- Set Up
  Press this button to access system functions.
- Enter
  Press this button to accept settings, or to start some system functions.
- Cancel
  Press this button to reject settings, reset an alarm, or abort a disinfection cycle.
  - Reject an incorrect user entry by pressing the CANCEL button. The previous value is restored, or the previous screen is displayed.
  - Abort the currently running cycle by pressing the CANCEL button, then the ENTER button.
  - Reset an alarm by pressing the CANCEL button, then the ENTER button.
- Station Select
  Press this button to select Station A or Station B.
- Start
  Press this button to start a disinfection cycle or resume an interrupted cycle, or to start some system functions.
- Stop
  Press this button to pause a disinfection cycle, acknowledge a warning message, or stop a system function.
- HLD Pass
  Upon verification that the disinfectant sample met the MRC using a test strip, press this button to confirm.
- HLD Fail
  Press this button if the disinfectant sample failed to meet MRC upon test strip verification. This information is recorded with the reprocessor log.

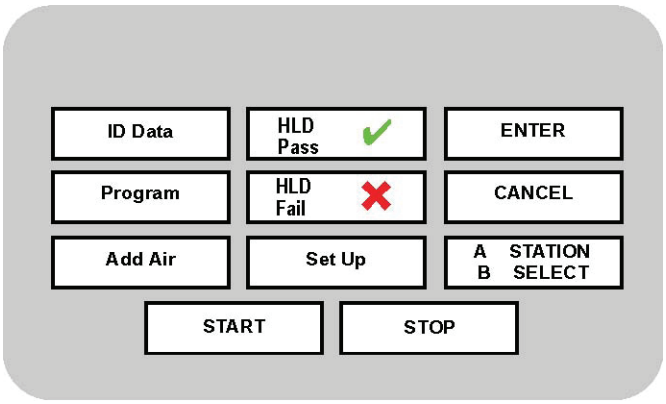


Figure 5: Function Keys

Setting Up the Reprocessor

Warning! Avoid possible chemical burns. Always wear personal protective equipment (gloves, goggles) when handling disinfectant.

Warning! Avoid possible slip injuries. Clean up any spills immediately.

Note: Part A Uptake Tube is fitted with the BLUE cap.
Part B Uptake Tube is fitted with the WHITE cap.

Note: Check Expiry Date of Part A and Part B before use.

Note: Ensure that Part A and B Caps are securely screwed onto containers.

▼ LOAD DISINFECTANT

The disinfectant is supplied in two separate 5 liter containers. Part A is the Peracetic Acid component, Part B is the buffer. Both containers fit into the disinfect drawer located on the left hand side of the reprocessor.

1. Open the doors of the reprocessor and slide the drawer fully out

2. Take the Part B container and place in the rear of the drawer.

3. Remove the bottle cap and foil seal.

4. Insert the Part B Uptake Tube (white cap) and fully secure to the container.

5. Take the Part A container and place in the front of the drawer.

6. Remove the bottle cap.

7. Insert the Part A Update Tube (blue cap) and fully secure to the container.

8. Close the disinfectant container drawer ensuring that the tubing is not restricted.

▼ SET THE DATE

Use this function to set the system date. This setting changes both the control panel display and the internal system clock.

1. Press the SETUP button.

2. Enter 2 on the keypad, then press the ENTER button.

3. Change the day setting.
   - Enter the correct two-digit day (01-31).
   - Press the ENTER button.

4. Change the month setting.
   - Enter the correct two-digit month (01-12).
   - Press the ENTER button.
   - The month is displayed as three alpha characters (Jan., Feb., etc.) in Run mode.

5. Change the year setting.
   - Enter the correct two-digit year (00-99).
   - Press the ENTER button.

6. Change the day of the week setting.
   - Enter the correct day (1-7, Sunday is 1).
   - Press the ENTER button.
   - The day of the week is displayed as two alpha characters (Su, Mo, etc.) in Run mode.

Note: Press the SETUP button at any time to exit the function.

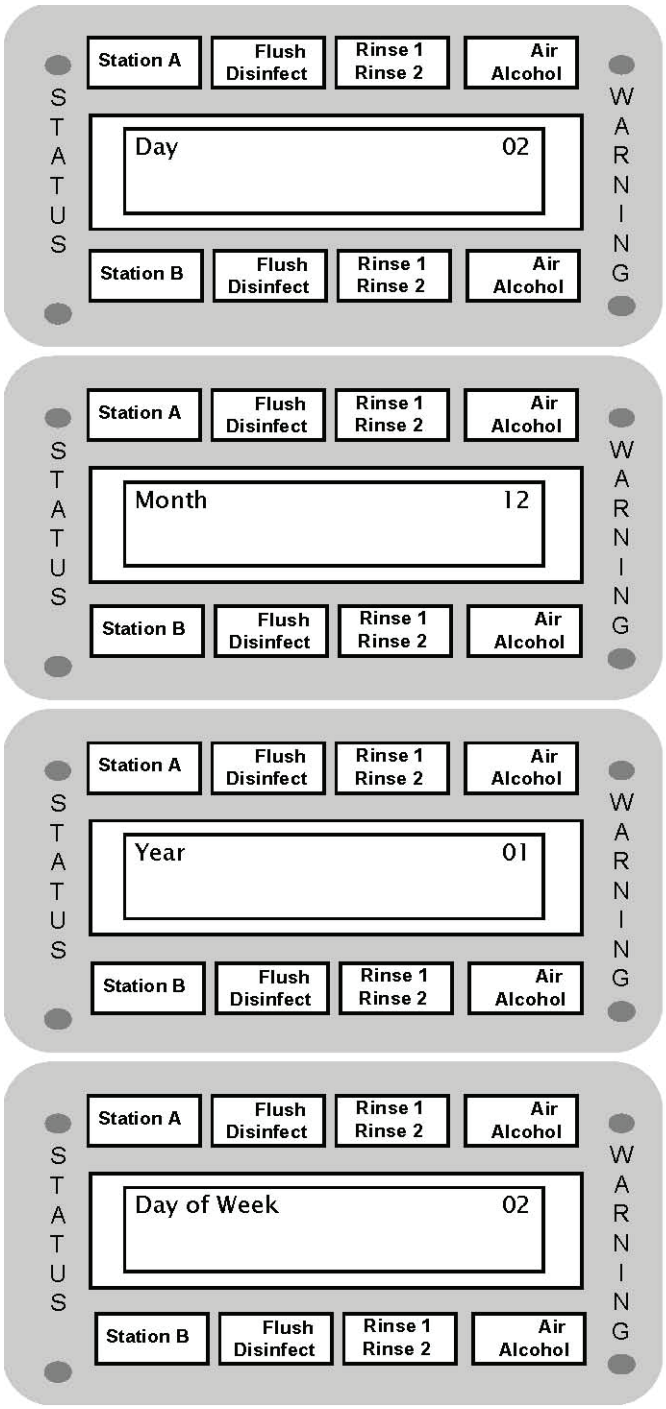


Figure 6: Set Date Screen

▼ SET THE TIME

Use this function to set the system time. This setting changes the display and the internal system clock. Verify the clock setting daily to ensure accuracy.

1. Press the SETUP button.

2. Enter 3 on the keypad, then press the ENTER button.

3. Change the hour setting.
   - Enter the correct two-digit hour (00-23, midnight is 00).
   - Press the ENTER button.

4. Change the minute setting.
   - Enter the correct two-digit minute (00-59).
   - Press the ENTER button.

Note: Press the SETUP button at any time to exit the function.

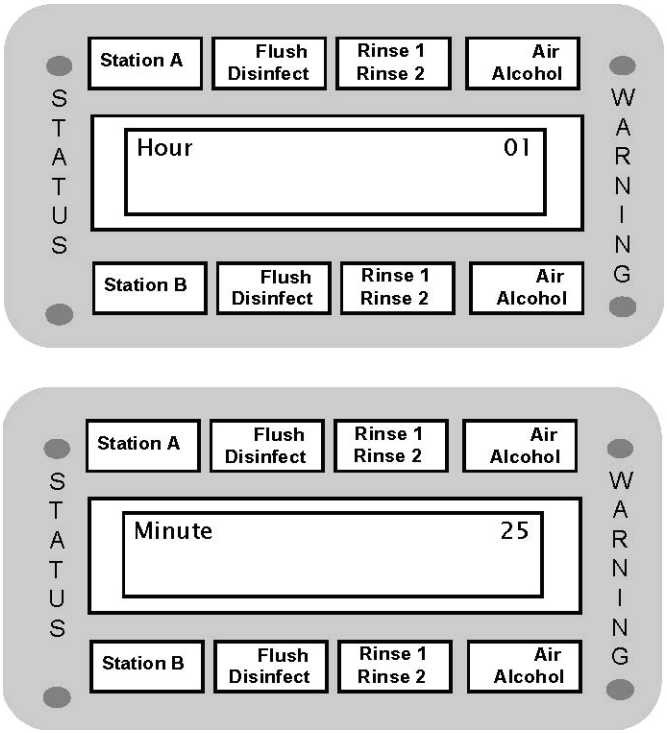


Figure 7: Set Time Screens

▼ DISPLAY SOFTWARE VERSION

Using the following procedure to view the current version of software installed in the reprocessor.

1. Press the SETUP button.
2. Enter 4 on the keypad, then press the ENTER button.
3. The current software and version is displayed.
4. Press the SETUP button to exit the display.

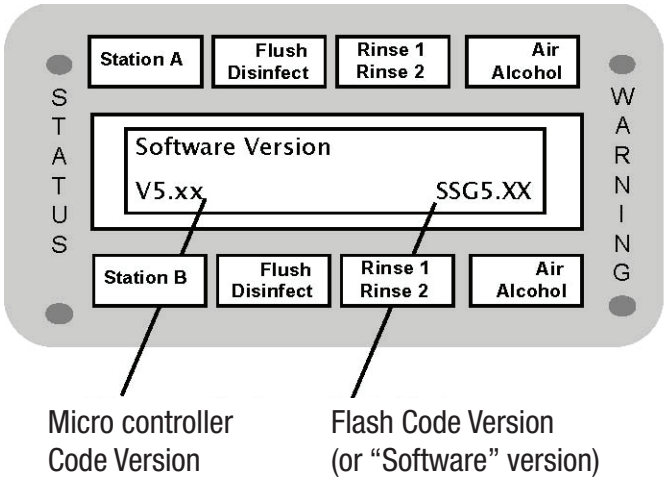


Figure 8: Software Version Screen

▼ DISPLAY LOG

This function allows review of the status log on the display. The entire log can be displayed one entry at a time, starting with the most recent entry.

1. Press the SETUP button.

    - Enter 8 on the keypad, then press the ENTER button.

2. The most recent log entry is displayed.

3. Press the ENTER button to scroll through the entries.

4. Press the SETUP button to exit the display.

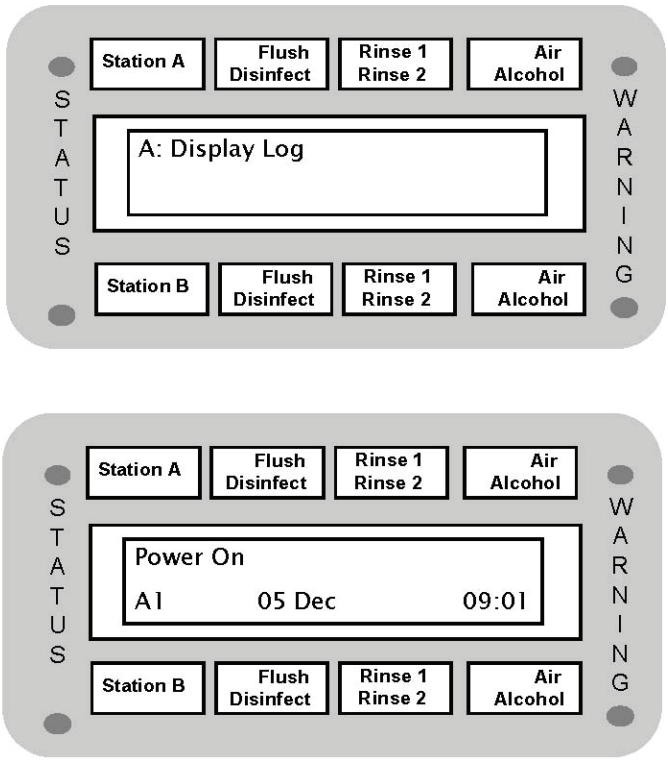


Figure 9: Display Log Screen and sample entry

▼ CLEAR LOG

The log stores 1463 records per station. Once the log is full, additional records will overwrite the oldest entries. Print a copy of the log and clear the log at regular intervals.

1. Press the STATION SELECT button to choose station A or station B. The selected station must be idle to perform this function.

2. Press the SETUP button.

   - Enter 10 on the keypad, then press the ENTER button.

3. The message “Clear Log?” is displayed.

   - Press the SETUP button to retain the log.
   - Press the ENTER button to clear the log.

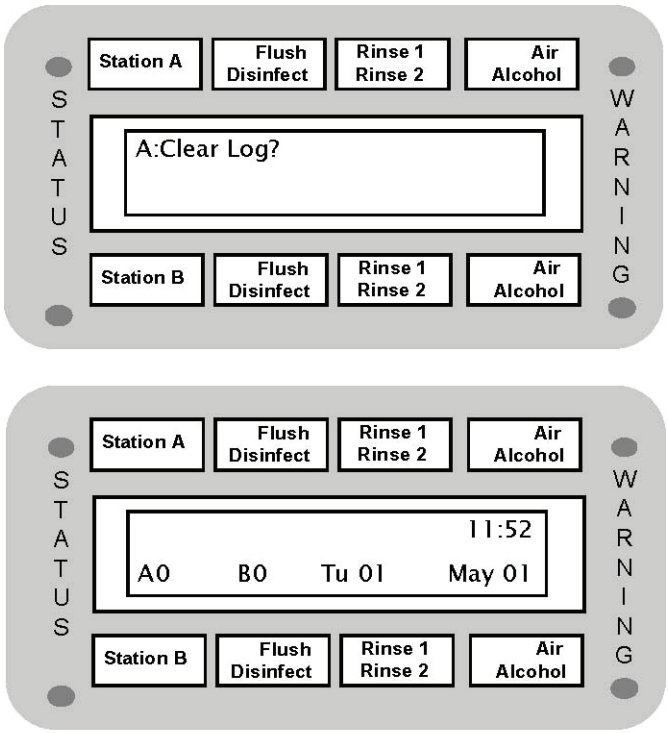


Figure 10: Clear Log Screen

▼ CLEAR DISINFECTANT CYCLE COUNT

Use the following procedure to clear the disinfectant cycle count.

1. Press the STATION SELECT button to choose station A or station B.

2. Press the SETUP button.
   - Enter 11 on the keypad, then press the ENTER button.

3. Press the ENTER button to clear the count.

4. Press the SETUP button to exit the display.

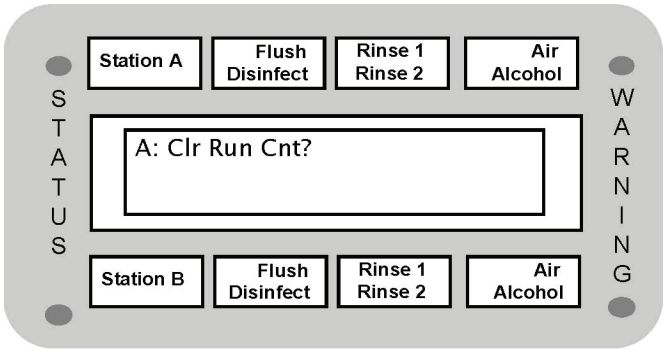


Figure 11: Clear Disinfectant Cycle Count Screen

Water Line Disinfection

This function disinfects the water lines in the reprocessor. The current water quality standard for Washers/Disinfectors in the United States and Canada recommends the use of potable (human consumption/drinking quality) water as the supply water for use in washers/disinfectors. If you facility can supply potable quality water to the DSD EDGE® automated endoscope reprocessor, you will meet these requirements, so daily disinfection of the water lines and water filter is not required, as long as the pre-filtration system is installed upstream of the reprocessor and is functioning properly. Other countries have a more stringent water quality requirement under the standard ISO 15883-4:2008 (Washers-disinfectors Part 4). If you are required to meet this standard, chemical disinfection of the water treatment (filtration) and delivery system must be performed on a weekly basis and whenever the 0.2 micron bacterial retentive filter is replaced. This standard requires that all rinse water delivered to the washer/disinfector contain no more than 10 cfu (colony forming units) per 100 ml. Microbiological quality of even potable water varies considerably. If you are unsure of the microbiological quality of your washer/disinfector supply water, you should have it tested according to either local or internal guidelines. This procedure must also be performed after each water filter change and after any service is performed on the water supply system.

Caution! Ensure the restrictor adapter provided with the installation kit is connected in the basin before performing this procedure.

1. Verify both stations are idle before performing this procedure. The default disinfection time is one and one-half (1-1/2) hour.

2. Press the SETUP button.
   - Enter 6 on the keypad, then press the ENTER button.

3. Press the START button.
   - The LCD displays a reminder message to “Attach Restrictor”. Press the START button again after verifying the restrictor is connected.

   - The disinfectant will remain in the lines for the pre-programmed water line disinfection time.

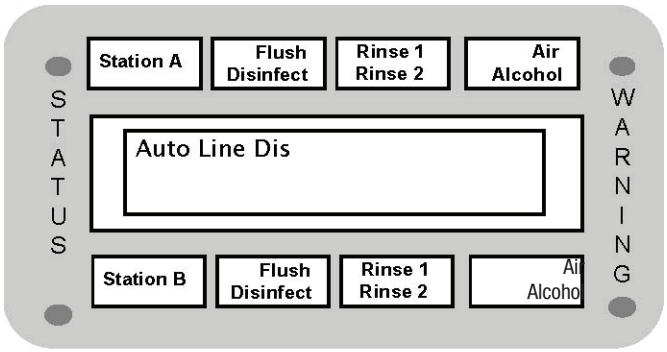


Figure 12: Water Line Disinfection Screen

Upon completion of a water line disinfection cycle, the on-board .2 micron water filter housing located behind the front access doors should be purged of air.

4. Press the SETUP button.
5. Press 43 on the keypad, then press ENTER. This will open the incoming water supply solenoid valve providing a water supply to the on-board .2 micron filter housing.

> Note: A counter on the LCD display will begin to count down from 250 to 0 in one second increments. After 250 seconds, the incoming water supply solenoid valve will automatically close if not manually closed sooner as explained within step 10.

6. Direct the purge line from the top of the on-board .2 micron water filter housing into a container that hold a minimum of 1 liter of liquid.
7. Slowly open the air bleed valve located on the purge line from the on-board .2 micron filter housing until the air is purged from the filter housing and a steady stream of water flows from the purge line.
8. After closing the air bleed valve, tap the purge line to promote the draining of the residual water within the purge line into the container.
9. Remove the container and empty.
10. Press the STOP button to close the incoming water supply solenoid valve and then press the STOP button again to exit the SETUP menu.

Programming the Reprocessor

▼ INPUT PROGRAM

Custom programs allow the operator to change the cycle parameter settings, or to setup custom reprocessing protocols. A maximum of nine custom programs can be pre-set. Refer to the disinfection cycle chart in the appendix for range settings.

Note: Depending on selections, some of the following screens will not be displayed.

Note: To deactivate a cycle, enter “0” for the time setting, then press the ENTER button.

1. Press the SETUP button.
   - Enter 5 on the keypad, then press the ENTER button.
2. The “Program 1” screen is displayed. Enter the program digit (1-9) on the numeric keypad, then press the ENTER button.
3. The “Flush” screen is displayed. Enter the desired detergent flush time.
   - Enter two digits for the minutes, then press ENTER.
   - Enter two digits for the seconds, then press ENTER.
4. The “Soak” screen is displayed. Enter the desired soak time.
   - Enter two digits for the minutes, then press ENTER.
   - Enter two digits for the seconds, then press ENTER.
5. The “Soak Rinse” screen is displayed. Enter the desired soak rinse time.
   - Enter two digits for the minutes, then press ENTER.
   - Enter two digits for the seconds, then press ENTER.

6. The “Detergent Inject” screen is displayed. Enter the desired detergent inject time. The volume of detergent is controlled by the number of seconds entered on the screen, up to a maximum of 59 seconds.

1 second	**= 3 mL detergent solution**

   - Enter two digits for the seconds, then press ENTER.

7. The “Rinse 1” screen is displayed. Enter the desired primary rinse time.
   - Enter two digits for the minutes, then press ENTER.
   - Enter two digits for the seconds, then press ENTER.

8. The “Rinse 2” screen is displayed. Enter the desired secondary rinse time.
   - Enter two digits for the minutes, then press ENTER.

9. Enter two digits for the seconds, then press ENTER. 10. The “Rinse 3” screen is displayed. Enter the desired rinse time.
   - Enter two digits for the minutes, then press ENTER.
   - Enter two digits for the seconds, then press ENTER

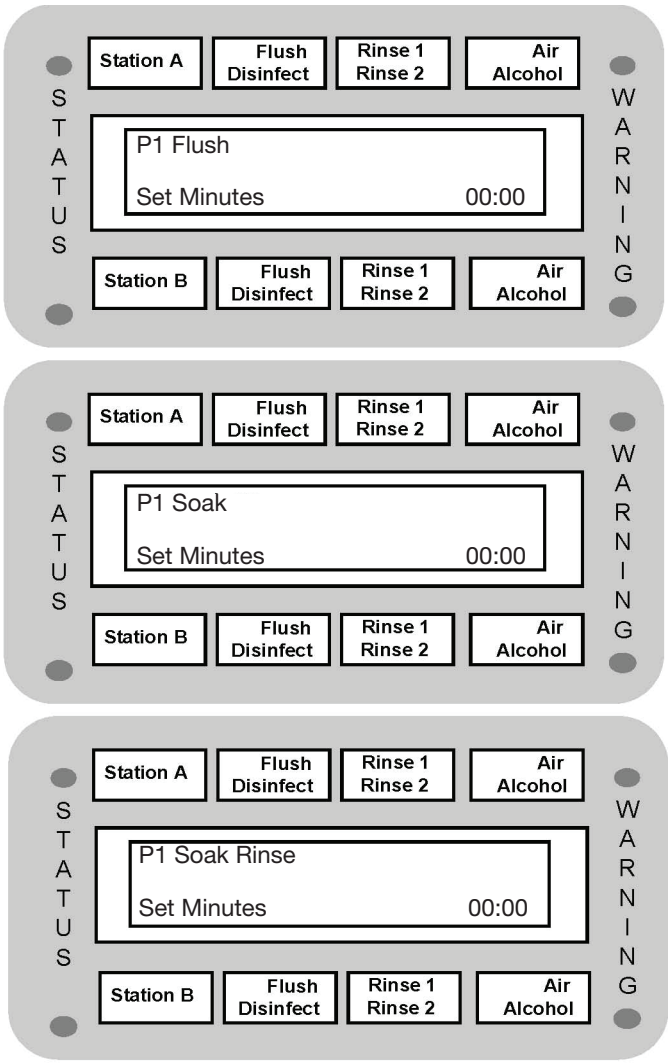


Figure 13: Custom Program Setup Screens

10. The “Alcohol” screen is displayed. Enter the alcohol purge time.
    - Enter two digits for the minutes, then press ENTER.
    - Enter two digits for the seconds, then press ENTER.

11. The “Alcohol Inject” screen is displayed. Enter the alcohol inject time. The volume of alcohol is controlled by the number of seconds entered on the screen, up to a maximum of 59 seconds.

1 second injection	**= 3 mL alcohol**

12. The “Air” screen is displayed. Enter the desired air cycle time.
    - Enter two digits for the minutes, then press ENTER.
    - Enter two digits for the seconds, then press ENTER.

13. The custom program setting is complete. Record the settings in the appendix for future reference (see the Custom Program Reference Chart).

Note: Press the STOP button at any time to exit the Custom Disinfection Program setup function.

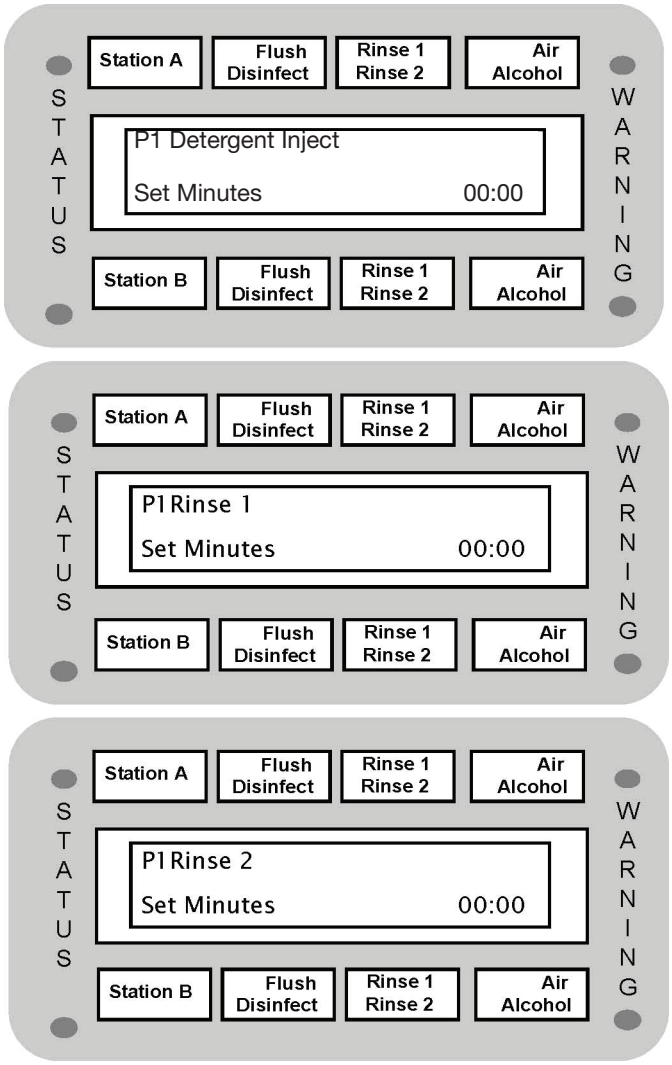


Figure 14: Custom Program Setup Screens

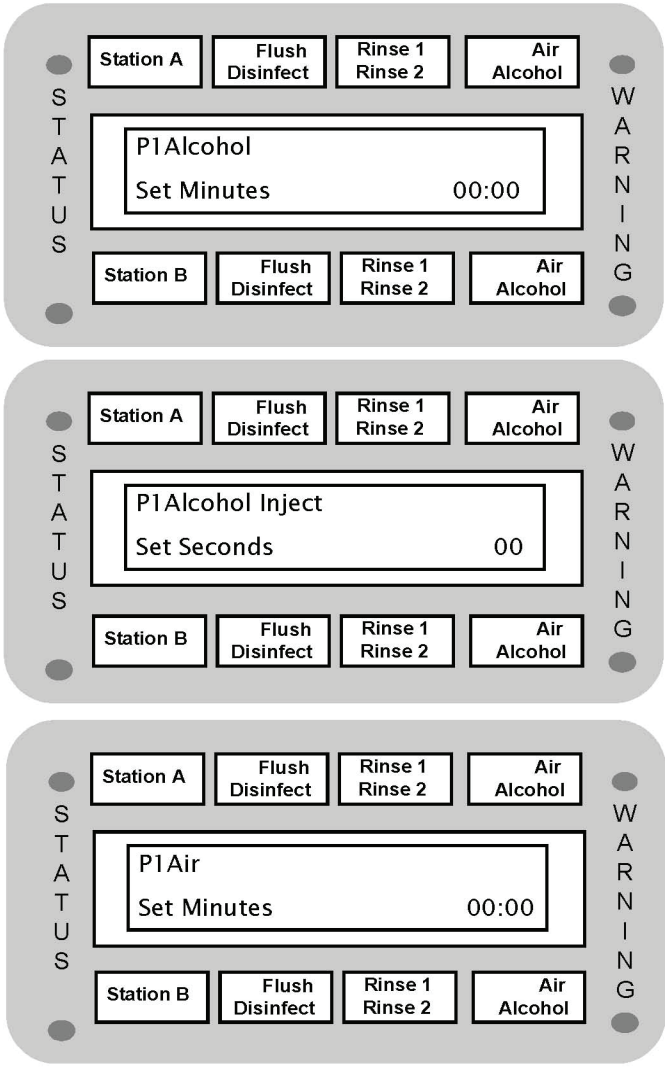


Figure 15: Custom Program Setup Screen

▼ DISPLAY TEMPERATURES

Use the following procedure to view the temperatures.

1. Press the SETUP button.
   - Enter 13 on the keypad, then press the ENTER button.
2. The temperatures are displayed in Celsius.
3. Press the SETUP button to exit the display.

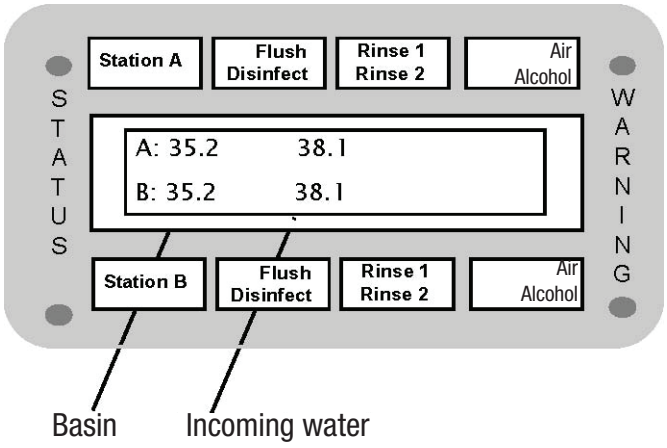


Figure 16: Display Temperature Screen

▼ DISPLAY TIME REMAINING

Use the following procedure to view the cycle time remaining for both stations.

1. Press the SETUP button.

    - Enter 17 on the keypad, then press the ENTER button.

        1 The typical cycle time remaining for each station is displayed, actual time may vary depending on the rate of incoming water.

        2 Press the SETUP button to exit the display.

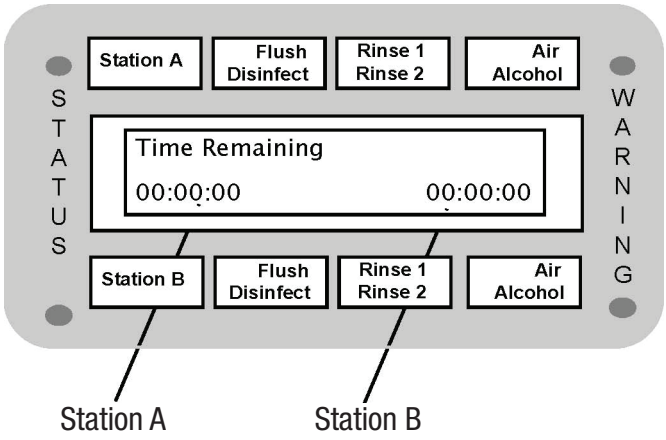


Figure 17: Time Remaining Screen

▼ DISPLAY STATE TIME

A cycle is comprised of a number of states. Use the following procedure to view the state time for both stations.

1. Press the SETUP button.
   - Enter 18 on the keypad, then press the ENTER button.
2. The current state number and time remaining for each station is displayed
3. Press the SETUP button to exit the display.

> Note: Refer to the Disinfection Cycle Chart in the Appendix for state times.

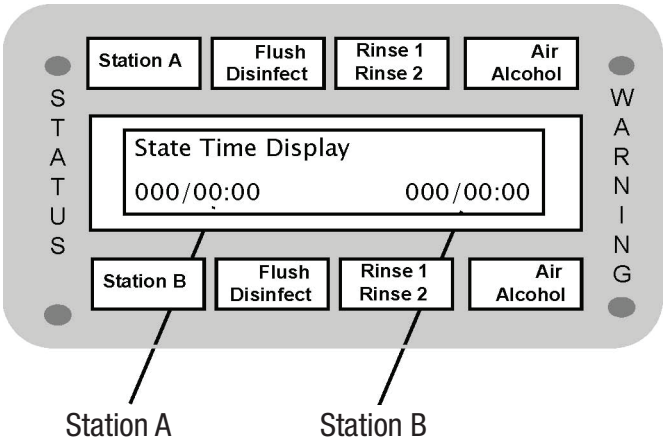


Figure 18: State Time Screen

▼ PRINT ENTIRE LOG

This function prints a copy of the disinfection cycle log. Only the information saved since the last time the log was cleared is printed. Verify the printer is ON before printing.

1. Press the STATION SELECT button to choose station A or station B.
2. Press the SETUP button.
   - Enter 21 on the keypad, then press the ENTER button.
3. Press the START button to print the log.
4. Use Setup 10 to clear the log.

> **Note:** The printing cannot be stopped once it is started

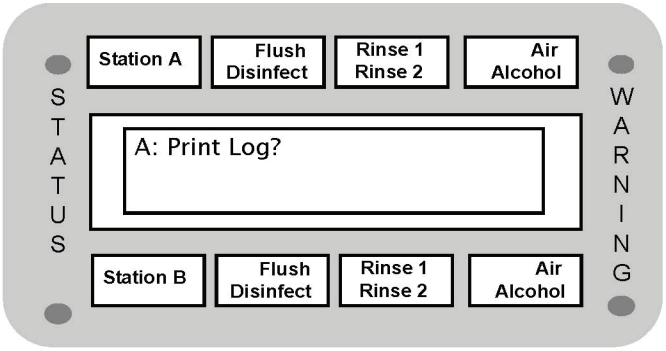


Figure 19: Print Entire Log Screen

▼ PRINT LAST RUN

This function allows printing of a paper copy of the last disinfection cycle run. Verify the printer is ON before printing.

1. Press the STATION SELECT button to choose station A or station B.
2. Press the SETUP button.
   - Enter 25 on the keypad, then press the ENTER button.
3. Press the START button to print the log.

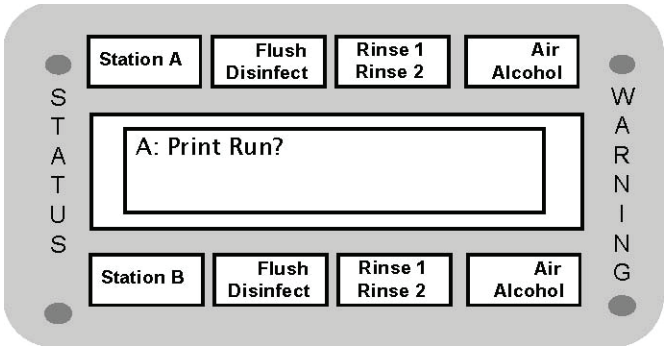


Figure 20: Print Last Run Screen

▼ SET AUTOMATIC PRINTING ENABLE

This function prints the log after every disinfection cycle. The default factory setting is “enabled”. Verify the printer is ON before printing.

1. Press the STATION SELECT button to choose station A or station B.
2. Press the SETUP button.
   - Enter 33 on the keypad, then press the ENTER button.
3. Enter 1 to enable automatic printing, then press the ENTER button.
   This will print one copy.
   - Enter 2 to print two copies, then press the ENTER button.
   - Enter 3 to print three copies, then press the ENTER button.

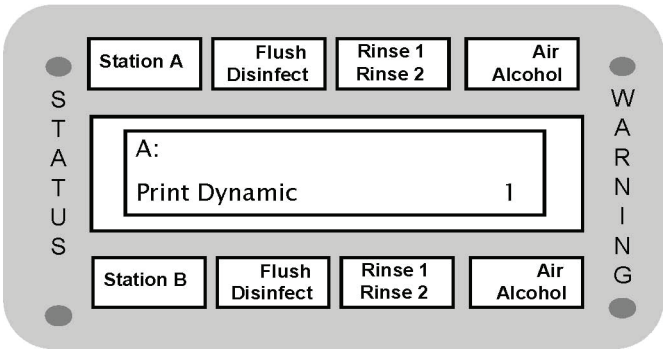


Figure 21: Automatic Printing Enable Screen

▼SET DELAYED START DATE/TIME

Use the following procedure to program the delayed startup time.

1. Press the STATION SELECT button to choose station A or station B.
2. Press the SETUP button.
   - Enter 28 on the keypad, then press the ENTER button.
3. Set the day setting.
   - Enter the correct two-digit day (01-31).
   - Press the ENTER button.
4. Set the month setting.
   - Enter the correct two-digit month (01-12). If the zero (0) is entered for the month, the programmed cycle will run every 24 hours.
   - Press the ENTER button.
5. Set the hour setting.
   - Enter the correct two-digit hour (00-23, midnight is 00).
   - Press the ENTER button.
6. Set the minute setting.
   - Enter the correct two-digit minute (00-59).
   - Press the ENTER button.
7. Enable the reprocessor (Setup 29) to perform the selected program at the time specified.

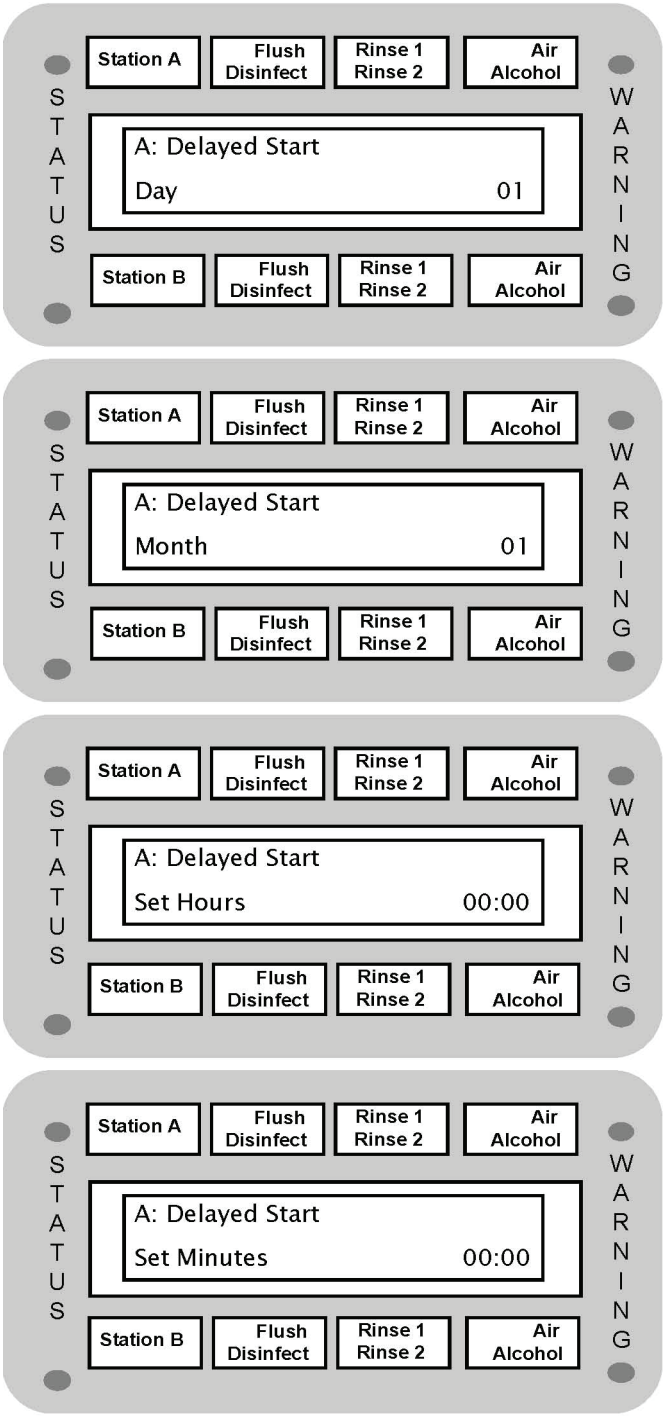


Figure 22: Set Delayed Startup Screen

▼ SET DELAYED START ENABLE

Use the following procedure to enable the delayed startup option.

1. Press the STATION SELECT button to choose station A or station B.

2. Press the SETUP button.
   - Enter 29 on the keypad, then press the ENTER button.

3. Select the startup option.
   - Press 1 on the keypad, then press the ENTER button to enable the delayed startup.
   - Press 0 on the keypad, then press the ENTER button to disable the delayed startup.

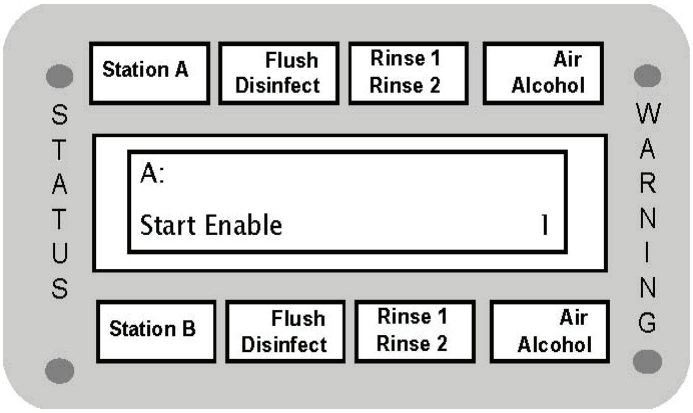


Figure 23: Enable Delayed Startup Screen

▼ ENTER DIAGNOSTICS

> **Caution!** Refer to the Service Manual for more information. Only properly trained personnel should attempt to perform the functions in the Diagnostics Menu.

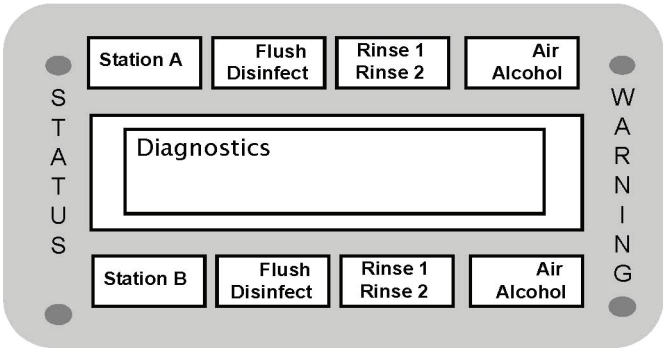


Figure 24: Enter Diagnostics Screen

Chapter 4

DIAGNOSTICS MENU

Introduction

Use the diagnostics functions to verify proper component operation when troubleshooting the reprocessor, to reset the reprocessor to default settings, to enable or disable sensors, to upgrade software, and to set up the reprocessor options.

Precautions

Always refer to the Safety section in the Introduction chapter before attempting to service the reprocessor. Verify a scope hookup is connected in the basin and the floating lid in place before operating the reprocessor. Always activate Function 0 before exiting the Diagnostics Functions menu.

Note: Refer to the flow diagram for proper component identification when using the diagnostics functions for troubleshooting.

Note: Use the STATION SELECT button to select stations while in the Diagnostics Menu.

Warning! Endoscope reprocessing may be compromised while preforming Diagnostics functions during a disinfectant cycle.

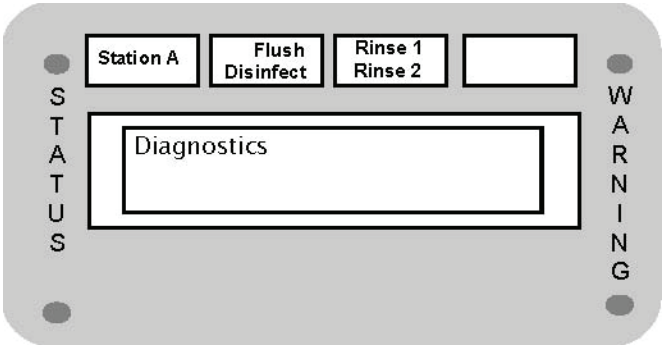
Diagnostics Functions

To enter diagnostics functions:

1. Press the SETUP button.
2. Enter 88 on the keypad, then press the ENTER button.
3. Enter the code: 135, then press the ENTER button.
4. Press the STATION SELECT button to choose station A or station B
5. Enter the function number on the keypad, then press the ENTER button.

Note: Diagnostics functions 1-19 can only be accessed by choosing function 0. This allows operation of Valve Control functions.

Caution! Verify all sensors are enabled before exiting the Diagnostics Menu.



Function 0–Close All Valves and Turn All Pumps Off

This function closes all valves and turns all pumps OFF. This function also cancels Function 18. Always use Function 0 before exiting the Diagnostics Function menu.

Note: To select multiple components, activate Function 18, then choose the components.

Note: Before exiting the Diagnostics Menu, always choose Function 0 to deactivate all devices, then choose Function 14 on Station B to open the water valve.

Function 1–Activate Detergent Valve

This function activates the detergent valve for the selected station.

Function 2– Activate Water Valve

This function activates the water valve on the main manifold for the selected station.

Function 3–Activate Alcohol Pump

This function activates the alcohol pump for the selected station.

Caution! Do not activate the alcohol pump unless the alcohol valve is open. Perform Functions 18, 12, 3 to activate.

Function 4–Activate Air System

This function activates the air system (compressor and air valve) for the selected station.

Caution! Ensure the scope hookup is connected in the basin before performing this procedure.

Function 5–Activate Air Valve

This function activates the air valve for the selected station.

Function 6–Activate Chamber Valve

This function activates the chamber valve for the selected station.

Function 7–Activate Disinfectant Pump

This function activates the disinfectant pump and valves 8 and 9 for the selected station.

Caution! Ensure the scope hookup is connected in the basin before performing this procedure.

Function 8–Activate Disinfectant Supply Valve

This function activates the disinfectant supply valve for the selected station.

Function 9–Activate Disinfectant Overflow Valve

This function activates the disinfectant overflow valve for the selected station.

Function 10–Activate Sample Port Valve

This function activates the disinfectant sampling valve.

Function 11–Activate Drain Valve

This function activates the drain valve for the selected station.

Note: To transfer fluid from the basin to the waste drain, activate Function 11.

Function 12–Activate Alcohol Valve

This function activates the alcohol valve for the selected station.

Function 13–Activate Isolation Valve

This function activates the Isolation Valve.

Function 14–Activate Water Inlet Valve

This function activates the water inlet valve for the entire reprocessor. This function is activated from station B diagnostics only.

Note: Before exiting the Diagnostics Menu, always choose Function 0 to deactivate all devices, then choose Function 14 on Station B to open the water valve.

Function 15–Activate Disinfectant Inlet Valve

This function activates the disinfectant inlet valve. The disinfectant inlet valve is used to supply the 0.2 micron filter during automatic water line disinfection procedures.

Function 16–Activate Recirculation Inlet Valve

This function is not available on the DSD EDGE® Endoscope Reprocessor.

Function 17–Activate Recirculation Chamber Valve

This function is not available on the DSD EDGE Endoscope Reprocessor.

Function 18–Activate Valves Incrementally

This function allows multiple components to be activated at the same time. Function 0 cancels this function.

Function 19–Activate Detergent Pump

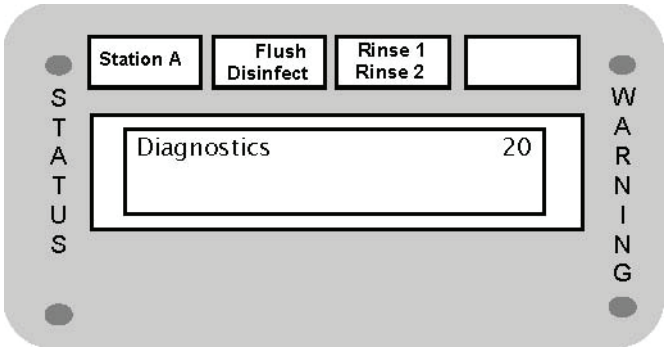
This function activates the detergent pump for the selected station.

> **Caution!** Do not activate the detergent pump unless the detergent valve is open. Perform Functions 18, 1, 19 to activate.

Function 20–Activate Station A LED

This function activates the "Station A" LEDs sequentially, in the following order:

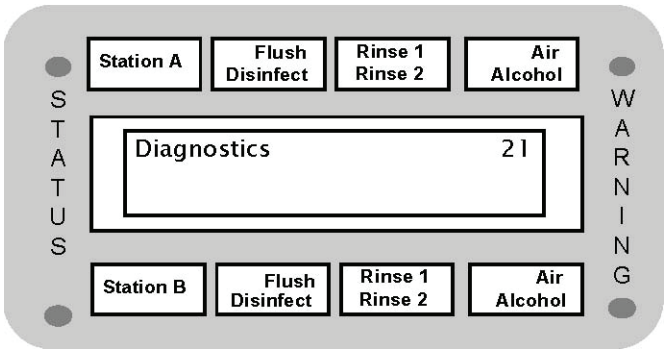
- Station A
- Flush
- Disinfect
- Alcohol
- Rinse 1
- Rinse 2
- Air
- Status



Function 21–Activate Station B LED

This function activates the “Station B” LEDs sequentially, in the following order:

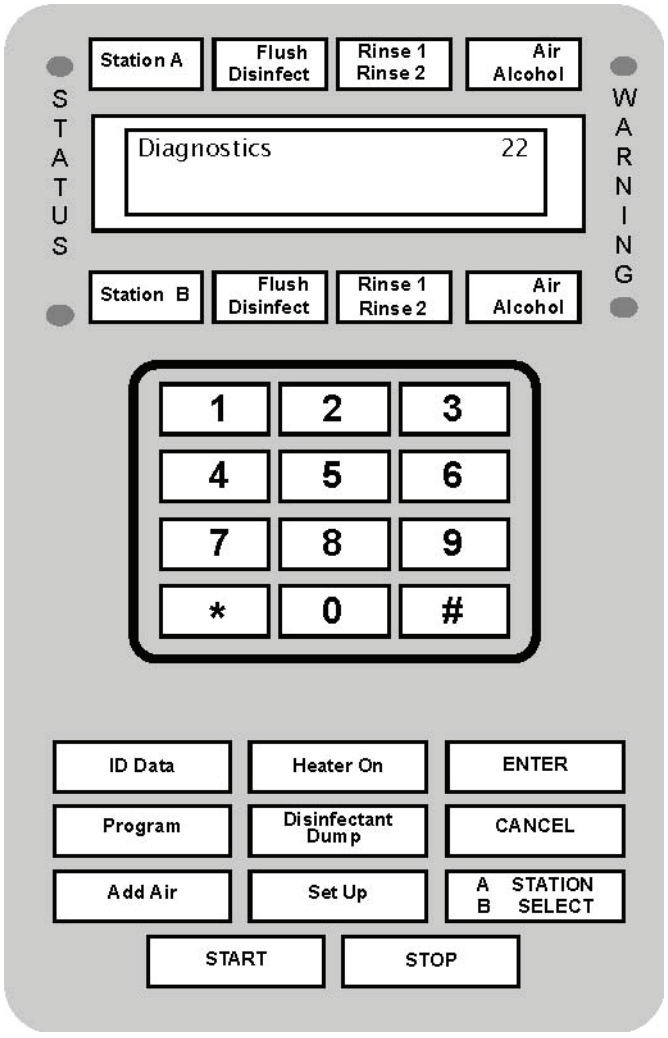
- Station B
- Flush
- Disinfect
- Alcohol
- Rinse 1
- Rinse 2
- Air
- Status



Function 22–Activate System LEDs

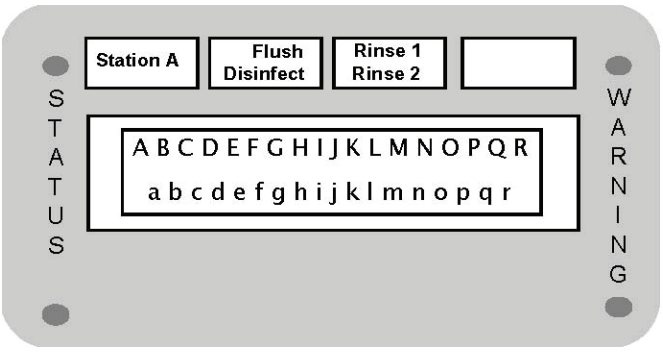
This function activates the system LEDs sequentially, in the following order:

- Heater On
- Disinfectant Dump
- Setup
- A: Warning
- B: Warning
- A: Station Select
- B: Station Select



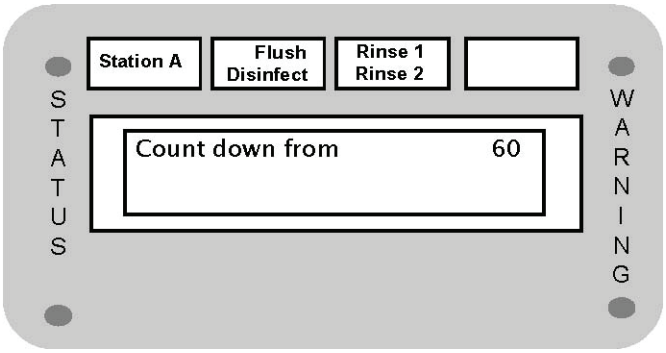
Function 23–Write LCD Test Pattern

This function writes a test pattern to the LCD.



Function 24–Write Counter to Display

This function writes a 60 second counter to the display. The timer counts down from 60.



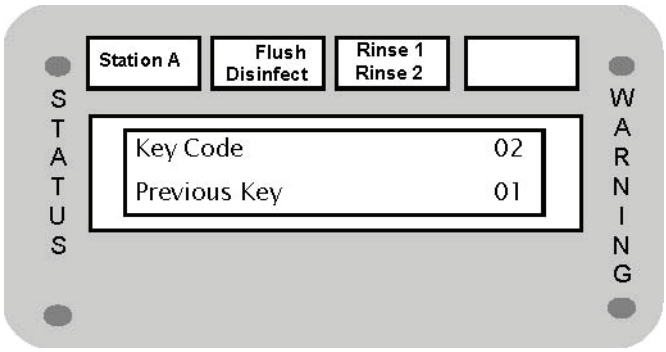
Function 25–Test Keypad

Use this function to perform a keypad test.

- Press each key to verify the correct key code displays.
- Press and hold the “*”, then press the “#” key to stop the test

Key	Code
1	01
2	02
3	03
4	04
5	05
6	06
7	07
8	08
9	09
0	00
*	21
#	22

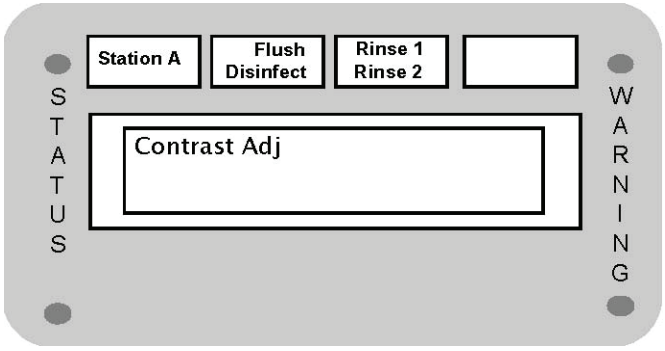
Key	Code
ID Data	18
Heater On	15
Enter	10
Program	19
Disinfectant Dump	16
Cancel	11
Add Air	20
Set Up	17
Station Select	14
Start	12
Stop	13



Function 26–Adjust LCD Contrast

Use this function to adjust the LCD contrast.

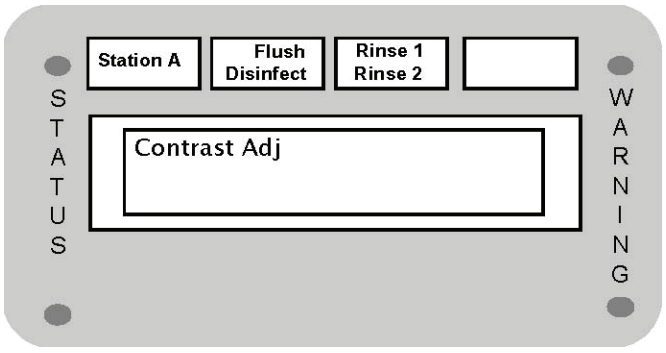
- Press and hold the “#” key or ENTER key. The contrast slowly changes.
- Release the key, then press ENTER again to change the direction of contrast (example: bright to dim, or dim to bright).
- Press the “*” key or the CANCEL key to exit.



Function 27–Adjust Alarm Volume

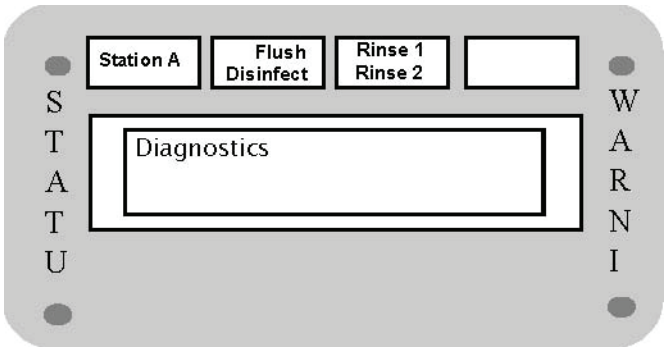
This function adjusts the alarm volume.

- Press and hold the “0” key to decrease the volume.
- Press and hold the “2” key to increase the volume.
- Press the “*” key or the CANCEL key to exit.



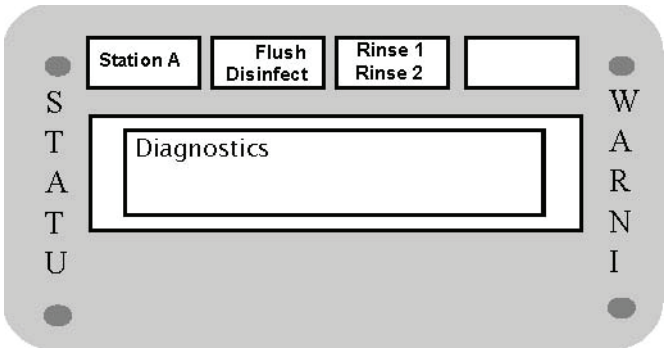
Function 28–Lock Cover (Optional)

This function activates the lidlock for the selected station.



Function 29–Unlock Cover (Optional)

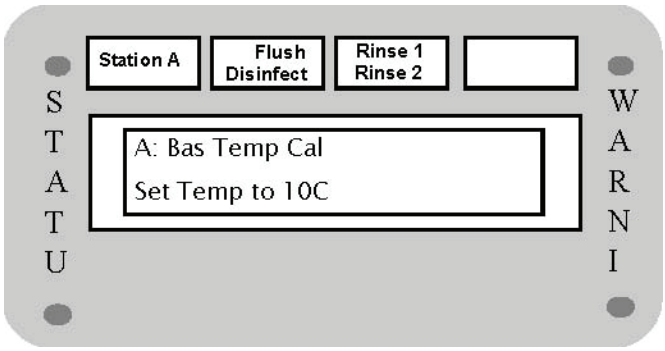
This function deactivates the lidlock for the selected station.



Function 31–Calibrate Basin Thermistor

This function calibrates the basin thermistor for the selected station.

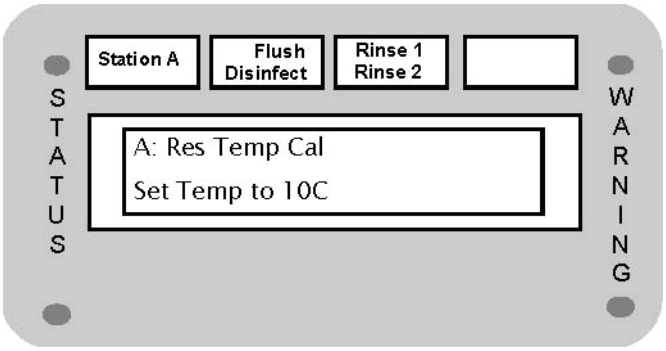
> **Caution!** DO NOT attempt to calibrate the thermistor. Call MEDIVATORS Technical Support for detailed instructions before proceeding.



Function 32–Calibrate Reservoir Thermistor

This function calibrates the reservoir thermistor for the selected station.

> **Caution!** DO NOT attempt to calibrate the thermistor. Call MEDIVATORS Technical Support for detailed instructions before proceeding



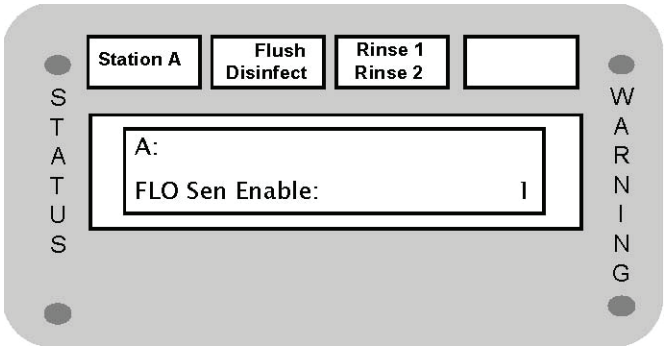
Function 37-SSG Sub-Menu.

This function allows access to test the Single Shot Generator (SSG)

Function 40–Flow Sense Inhibit

This function enables/disables both the fluid and air flow sense inhibit. Set the fluid sense enable, then the air sense enable for the selected station.

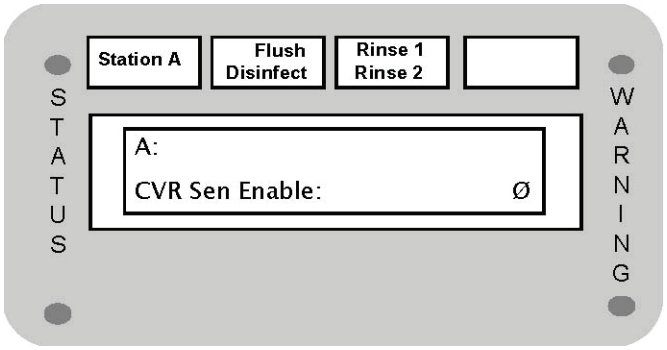
- Enter “0” to disable the sensor.
- Enter “1” to enable the sensor.



Function 41–Cover Sense Inhibit

This function enables/disables the cover sense inhibit for the selected station.

- Enter “0” to disable sensor.
- Enter “1” to enable sensor.

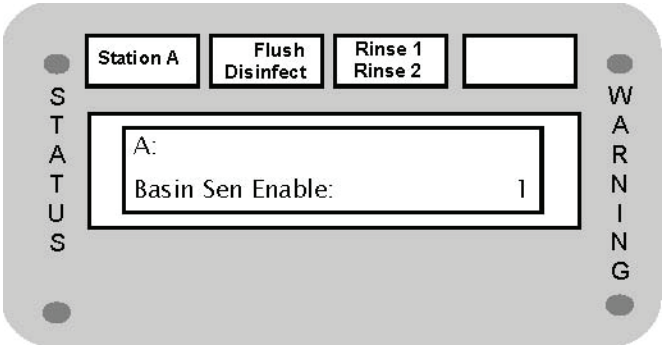


Function 42–Basin Level Sense Inhibit

This function sets the basin level sense inhibit for the selected station.

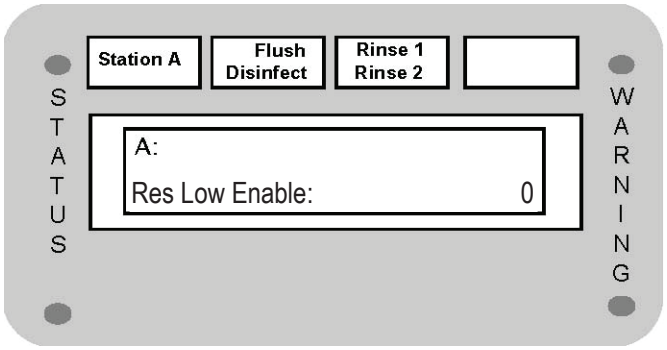
- Enter “0” to disable sensor.
- Enter “1” to enable sensor.

> **Caution!** Do NOT disable this sensor during a disinfection cycle.



Function 43–Reservoir Low Level Sense Inhibit

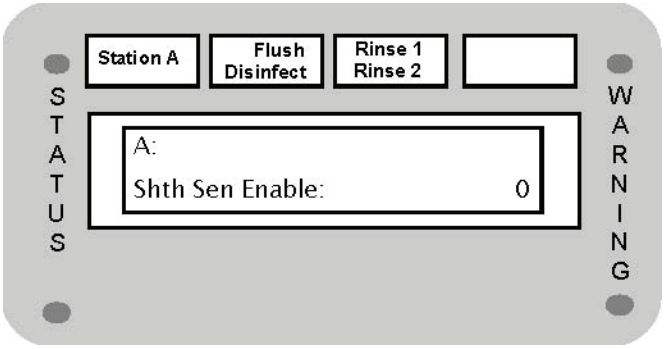
This function must be set to “0” on the DSD EDGE® Endoscope Reprocessor.



Function 45–Sheath Sense Inhibit

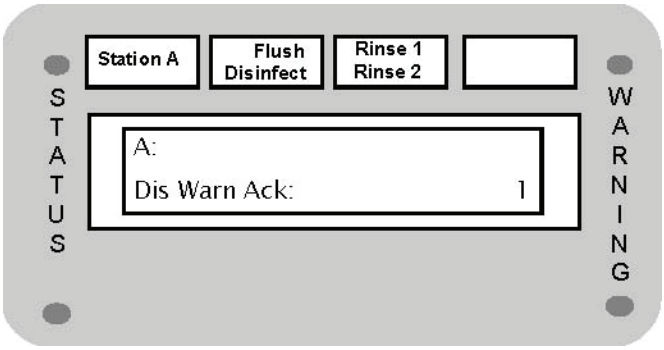
This function sets the sheath sense inhibit for the selected station. This sensor must be disabled if the leak tester option is not present.

- Enter “0” to disable sensor.
- Enter “1” to enable sensor.



Function 46–Disinfectant Warning Acknowledge

This function is to be set to 1 for the DSD EDGE® Endoscope Reprocessor.

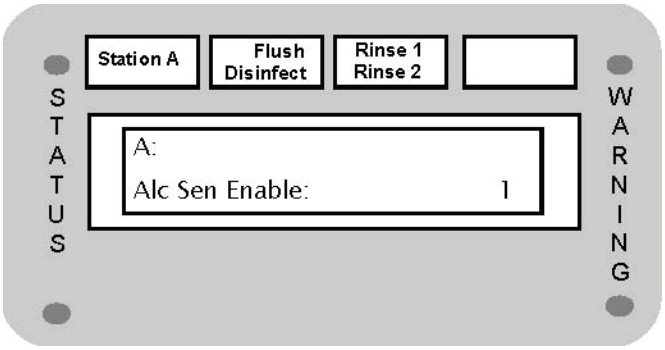


Function 47–Enable Alcohol Level Sensor

This function enables/disables the alcohol level sensor for the selected station.

- Enter “0” to disable sensor.
- Enter “1” to enable sensor.

> Note: Disable both Station A and B alcohol sensors to disable alcohol sensing.

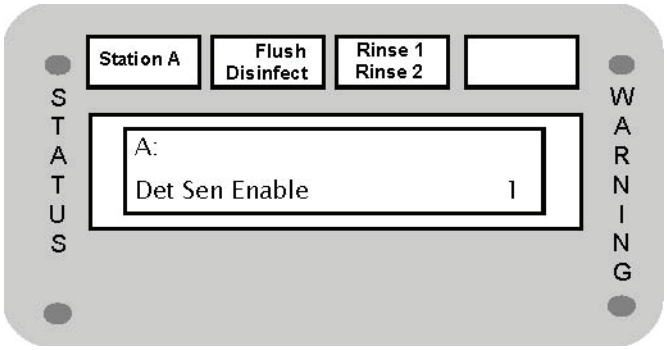


Function 48–Enable Detergent Sensor

This function enables/disables the detergent sensor for the selected station.

- Enter “0” to disable sensor.
- Enter “1” to enable sensor.

> Note: Disable both Station A and B detergent sensors to disable detergent sensing.



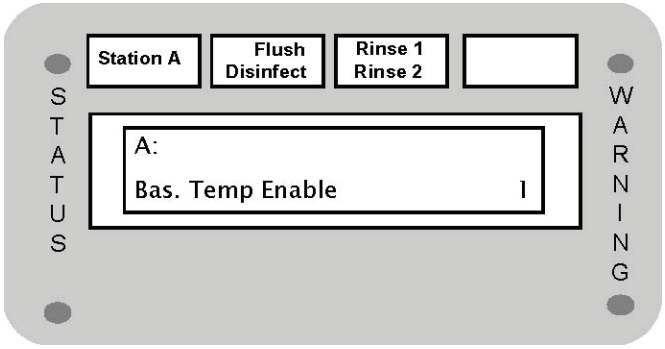
Function 49–Temperature Monitoring Enable

This function sets the temperature monitoring enable for the selected station. Set the basin temperature monitoring enable, then set the reservoir high temperature monitoring enable, then set the reservoir low temperature monitoring enable.

- Enter “0” to disable monitor.
- Enter “1” to enable monitor.

> Note: This function is not accessible if the temperature monitoring is disabled in Diagnostic 88.

> Note: Functions 50 - 57 are for the optional Leak Tester. Refer to the section on Leak Testing in the Maintenance Chapter.

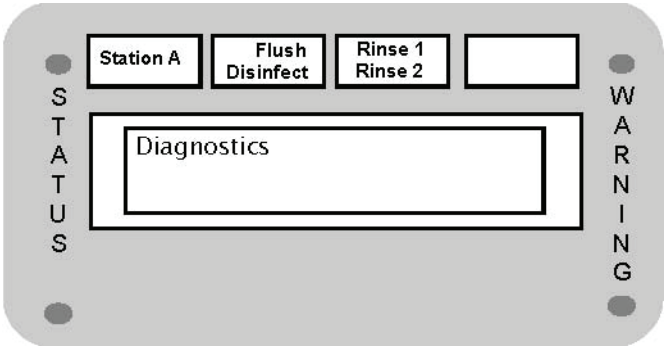


Function 50–Turn Sheath Test Off

This function will stop a sheath test that is in progress.

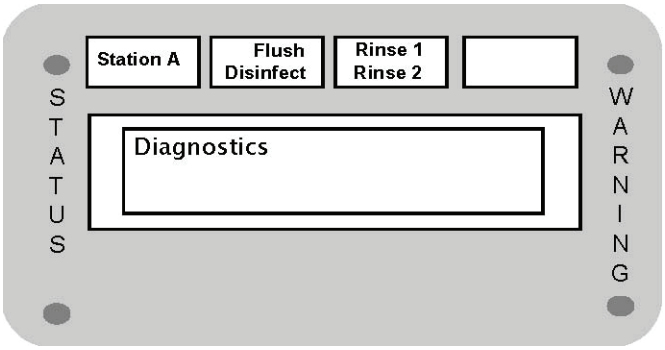
Function 51–Activate Sheath Valve

This function activates the sheath valve.



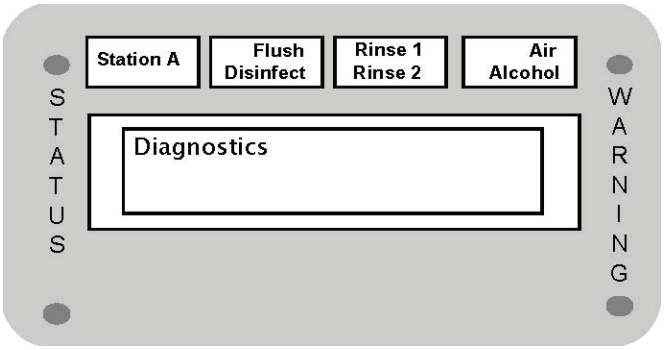
Function 52–Activate Sheath Test Compressor Valve

This function activates the sheath test compressor valve.



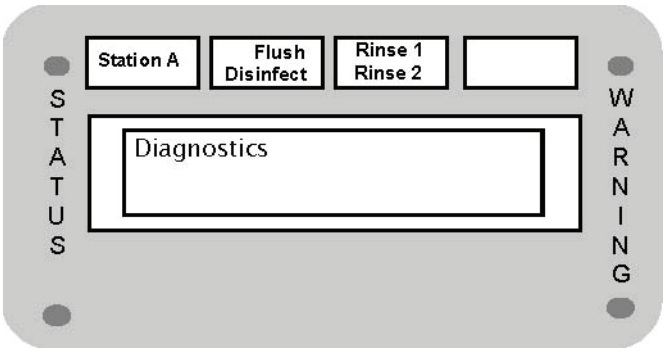
Function 53–Activate Sheath Test Compressor

This functions activates the sheath test compressor.



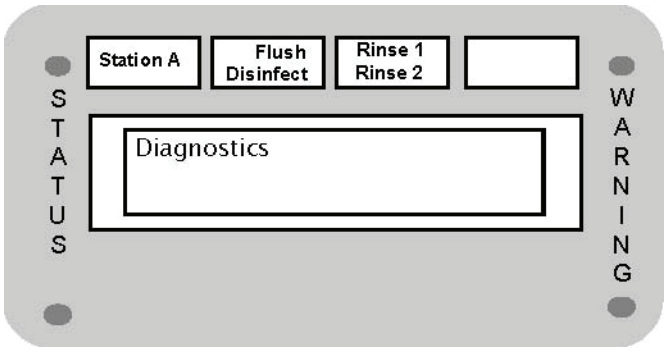
Function 54–Turn Off All Valves and Reset Latches

This function turns off all valves, turns off the compressor, and resets the latches for the sheath tester.



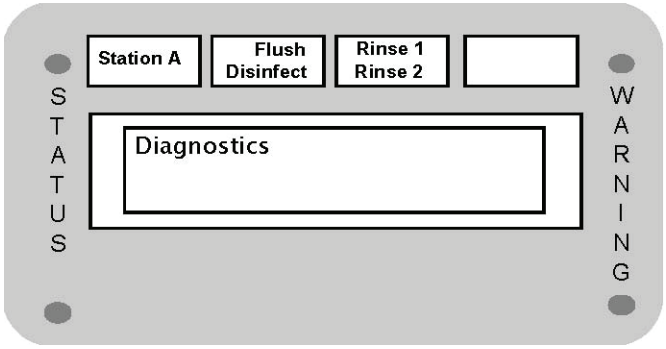
Function 55–Turn Off Sheath Test Compressor

This function turns off the sheath test compressor.



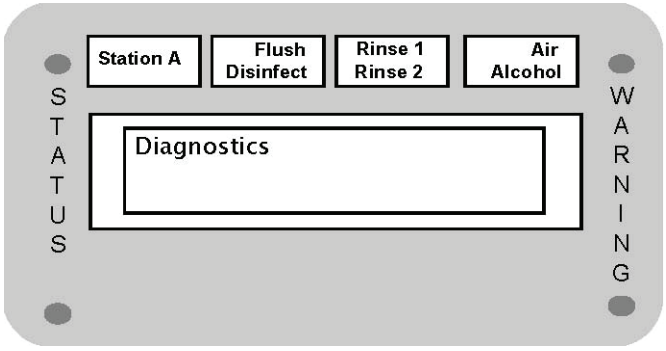
Function 56–Activate Sheath Test

This function activates the sheath test.



Function 57–Activate Sheath Hold

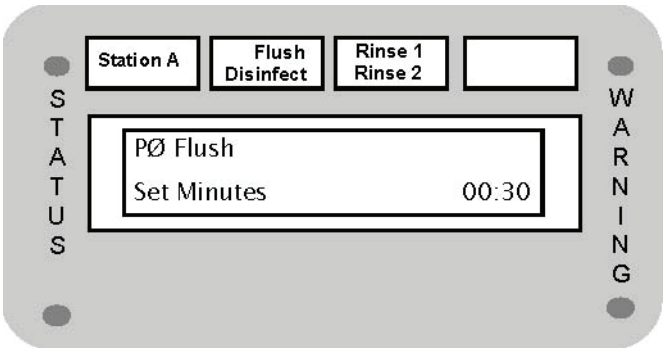
This function activates the sheath hold.



Function 60–Set Default Program

Use this function to modify program 0.

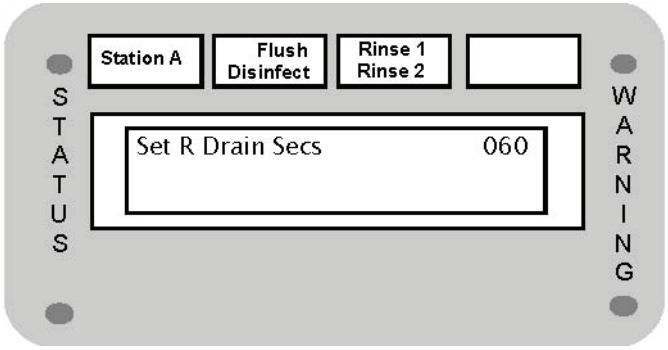
- Follow the “Custom Disinfection Program” procedure in Chapter Three to set the default program.



Function 61–Set Rinse Drain Time and Disinfectant Drain Time

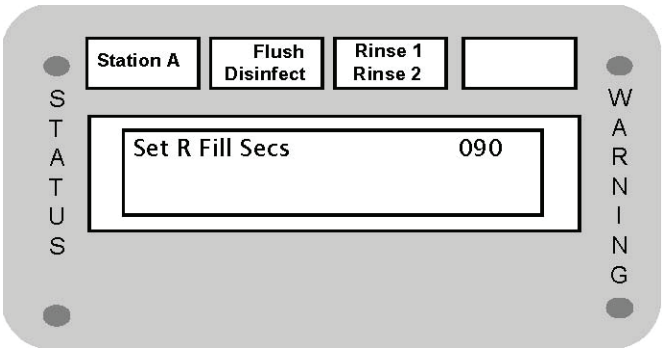
Use this function to set the rinse drain time and disinfectant drain time. The rinse drain time is the portion of the drain time during which the scope is purged with rinse water. If this is set below 60 seconds, an incomplete drain may occur.

Note: It is not recommended to set the disinfectant drain time below 90 seconds, otherwise disinfectant may be lost.



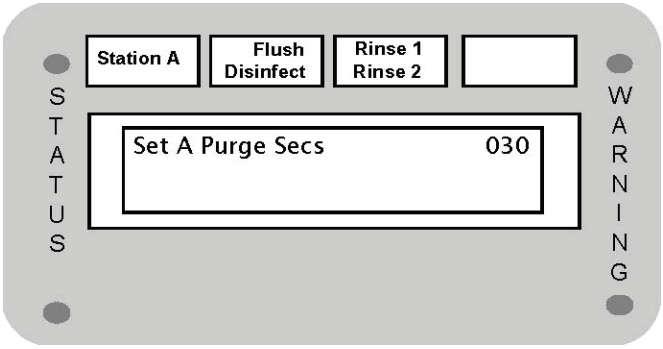
Function 62–Set Rinse and Disinfectant Fill Times

Use this function to set the rinse and disinfectant fill times. These are the required minimum times prior to checking the level sensor.



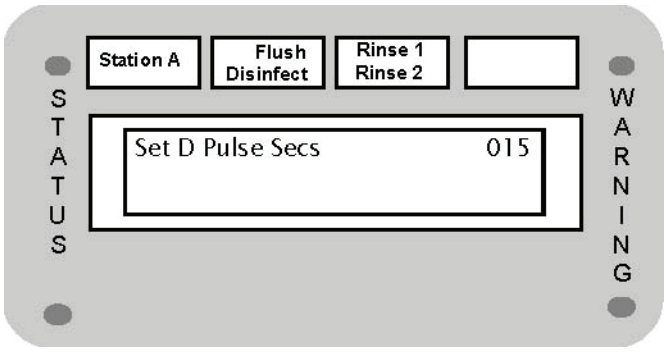
Function 63–Set Fluid and Air Purge Times

Use this function to set the fluid and air purge times. The fluid purge time is used at the start of each rinse to flush the scope channels with water. The air purge time is used at the end of each fluid phase.



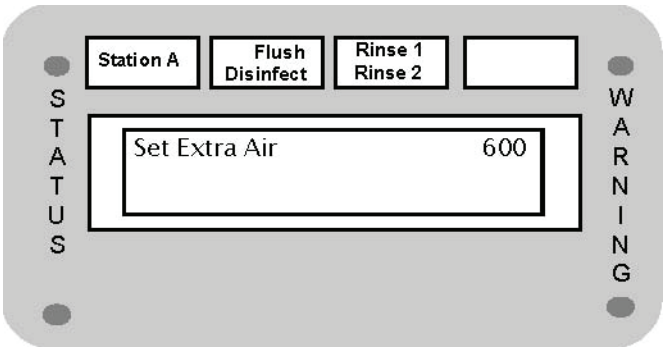
Function 64–Set Disinfectant Pulse Time

Use this function to set the disinfectant pulse time. The disinfectant pulse occurs at the end of the disinfectant fill stage. The chamber valve is pulsed open and closed to reduce the risk of losing disinfectant down the overflow valve.



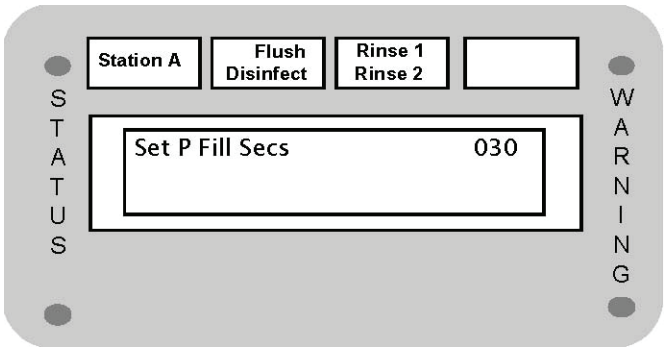
Function 65–Set Add Air Time

Use this function to set the add air time.



Function 66–Set Partial Rinse Fill and Drain Times

Use this function to set the partial rinse fill and drain times. Set the fill time, then set the drain time.



Function 67–Set Rinse/Disinfectant Top-Off Times

The basin fills until the monitor is activated, then the top-off fills for a pre-programmed time to ensure the scope is totally immersed in the basin. Use this function to set the rinse and disinfectant top-off times. Set the rinse top-off time first, then set the disinfectant top-off time.

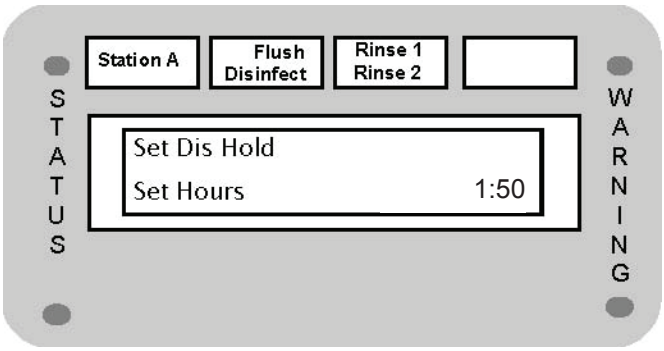
Warning! Total immersion of the scope may be compromised if the Top-off time is set too low. Disinfectant may be lost down the overflow drain if Top-off time is set too high.

Function 68-Set Recirculation Rinse Time.

Not used in DSD EDGE® Endoscope Reprocessor

Function 69–Set Water Line Disinfect Hold Time

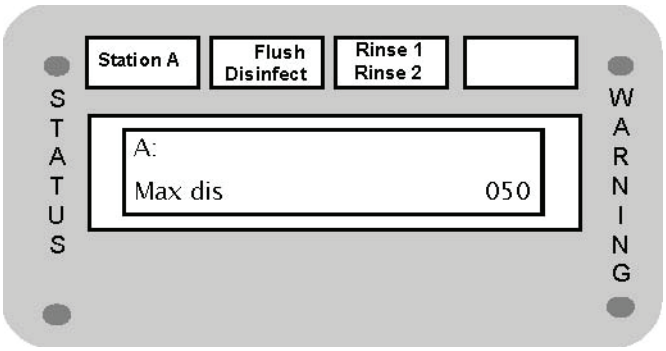
Use this function to set the water line disinfect hold time. Refer to the Water Line Disinfect procedure in the Operator Controls chapter.



Function 70-Rest System Alarms

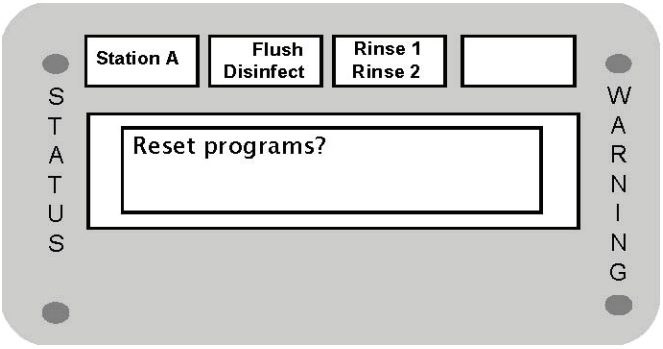
Function 71–Set Maximum Disinfectant Cycle Count

Use this function to set the maximum disinfectant day and cycle count (1-255) for the selected station. The maximum disinfectant day counter functions in the DSD EDGE Endoscope Reprocessor. The maximum disinfectant cycle count alarm set point has no effect on the DSD EDGE Endoscope Reprocessor.



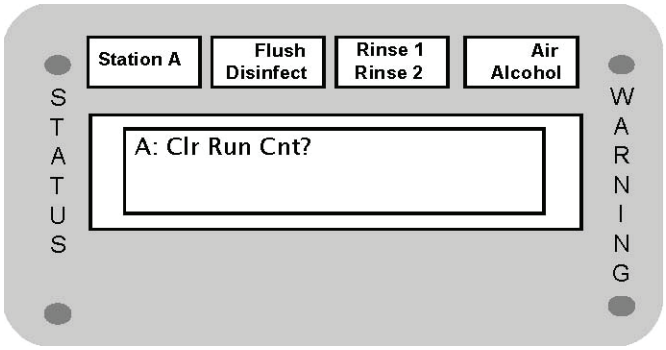
Function 72–Reset Programs

Use this function to reset the nine custom and one default programs.



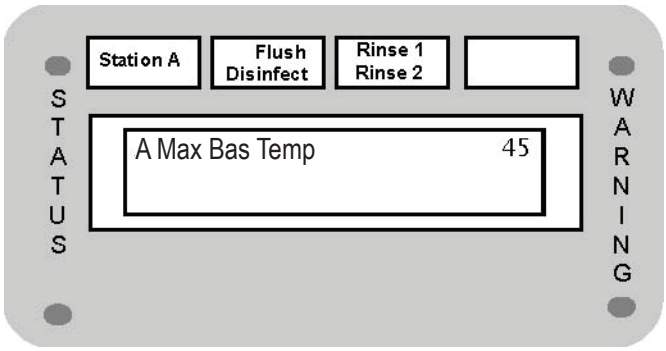
Function 73–Clear Disinfectant Counter

Use this function to clear the disinfectant cycle counter for the selected station.



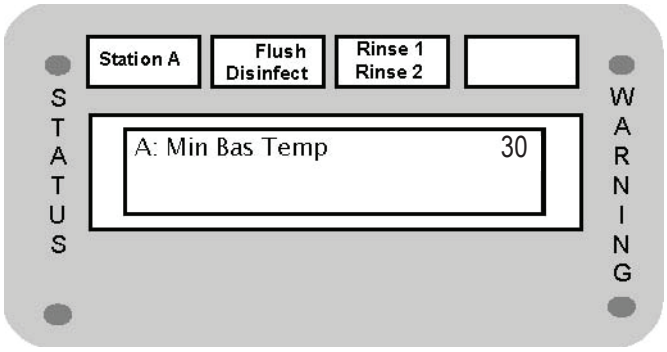
Function 74–Maximum Basin Temperature

Use this function to set the maximum basin temperature for the selected station. The temperatures are displayed in Celsius.



Function 75–Set Minimum Basin Temperature

Use this function to set the minimum basin temperature for the selected station. The temperatures are displayed in Celsius.



Function 76 - Enable Auto Restart

Function 77 - Disable Auto Restart

Function 78-Enable Automatic Disinfect Delayed Start

Use this function to enable a weekly automatic disinfect delayed start. This function is used in conjunction with SET UP 28 and 29.

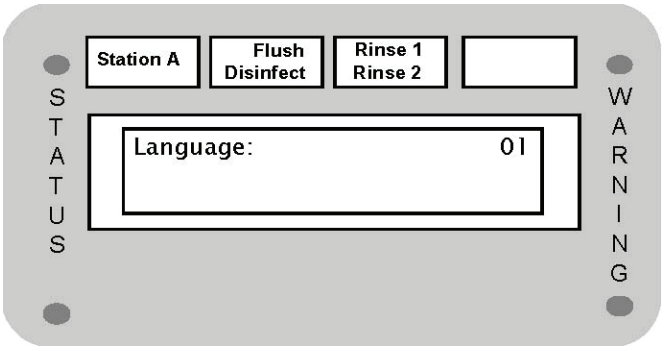
Function 79–Enable All Sensors

Use this function to enable all sensors for both stations.

Function 80–Set Language

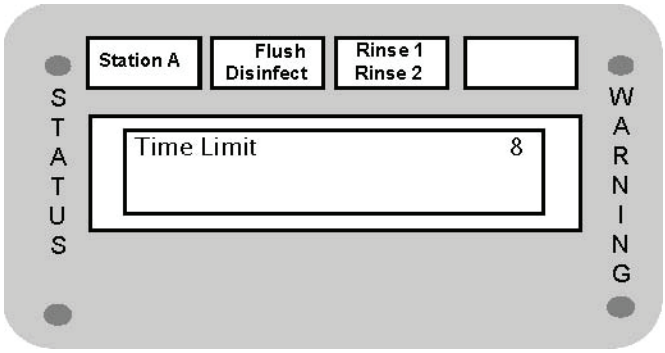
Use this function to set the desired language.

- 00: English, North American
- 01: English, UK (not currently available)
- 02: German (not currently available)
- 03: French (not currently available)
- 04: Spanish (not currently available)
- 05: Japanese (not currently available)
- 06: Italian (not currently available)
- 07: Anglo-English
- 08: Polish (not currently available)



Function 81–Set Time Limit

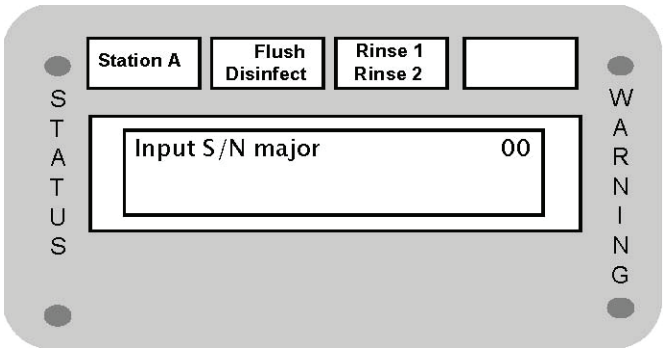
Use this function to set the time limit (0-8). For the DSD EDGE® Endoscope Reprocessor only option 7 will be used.

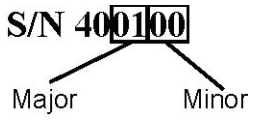


Function 82–Set Serial Number

Use this function to set the reprocessor serial number. The serial number can be found inside the cabinet, on the left panel.

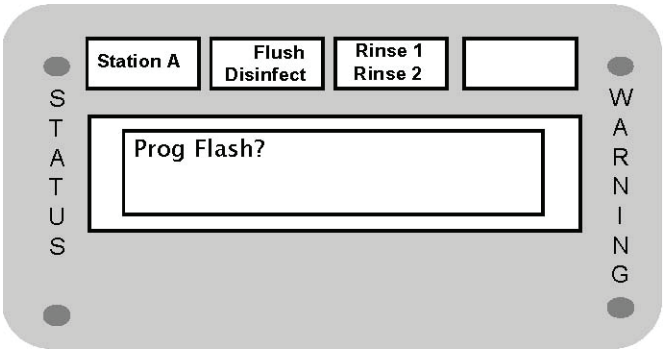
- Enter the middle two digits (major) of the serial number, then press the ENTER key.
- Enter the last two digits (minor) of the serial number, then press the ENTER key.





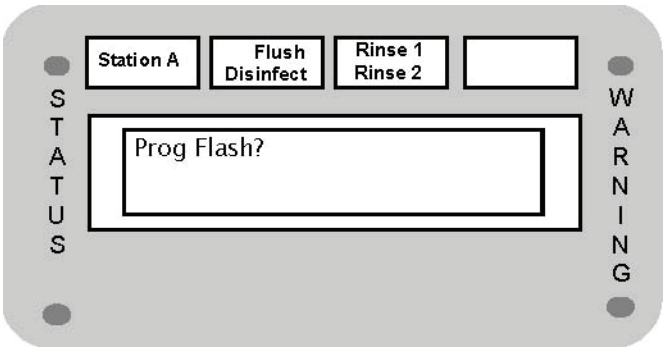
Function 83–Program Low Flash

Use this function to perform a program low flash. See the software update instructions for more information.



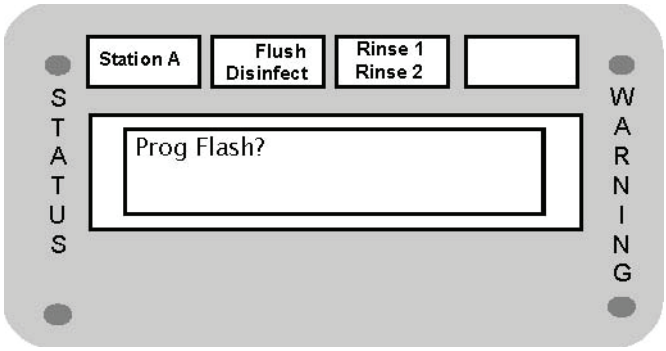
Function 84–Program High Flash

Use this function to perform a program high flash. See the software update instructions for more information.



Function 85–Program Entire Flash

Use this function to perform a program all flash. See the software update instructions for more information.



Function 86–Initialize NVRAM

Use this function to initialize the NVRAM

> **Caution!** Initializing the NVRAM will set all sensors and programs to default. Be sure to record all custom settings and programs before performing this function.

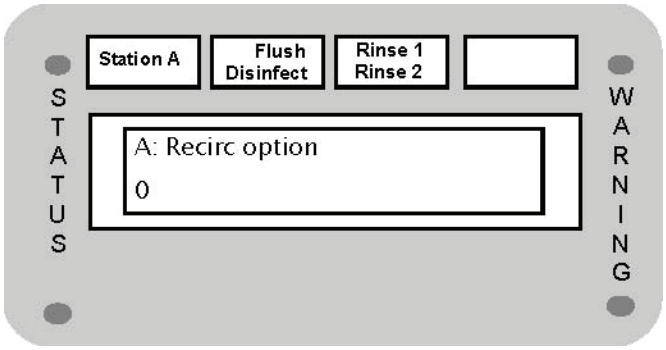
Function 87–Disable All Sensors

Use this function to disable all sensors.

Function 88–Set Options

Use this function to set the options. Options include recirculation, water line disinfect, heated reservoirs, and temperature sensing for the selected station.

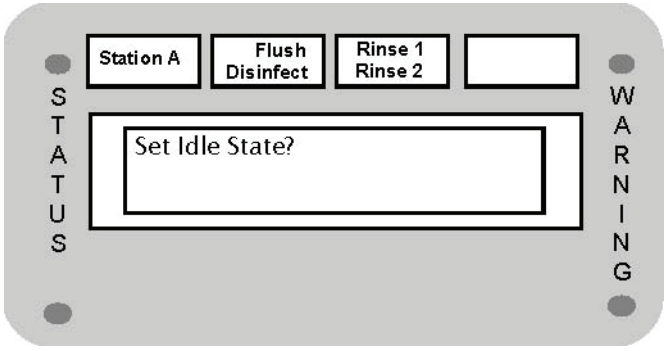
- Enter “0” if the reprocessor does not have this option.
- Enter “1” if the reprocessor has this option.



Function 89-Set Station to Idle State

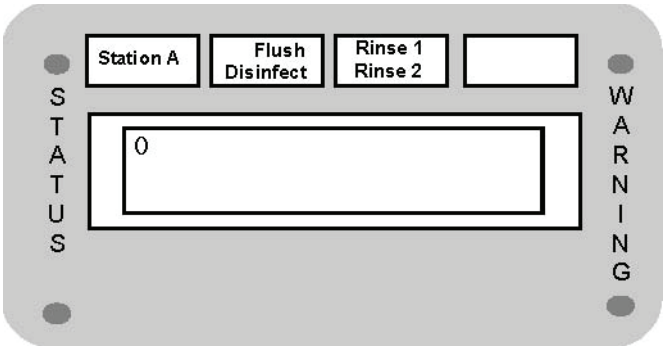
Use this function to force the reprocessor into an immediate cycle cancellation.

- Press ENTER to acknowledge.
- Press CANCEL to exit.



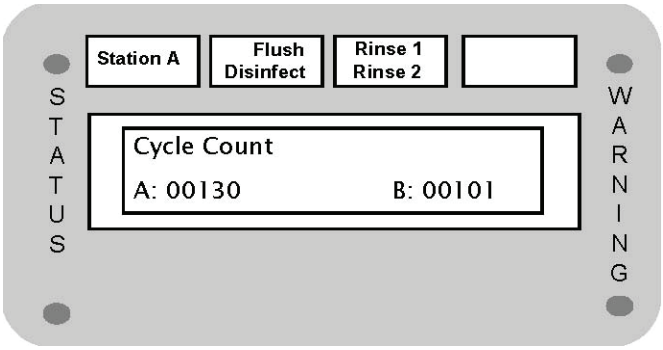
Function 90–Display Inputs

This function displays the inputs (used for factory testing).



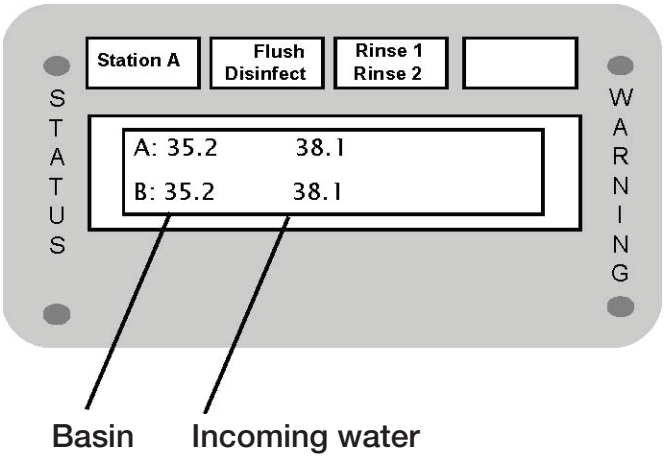
Function 91-Display Cycle Count

Use this function to display the cumulative cycle count.



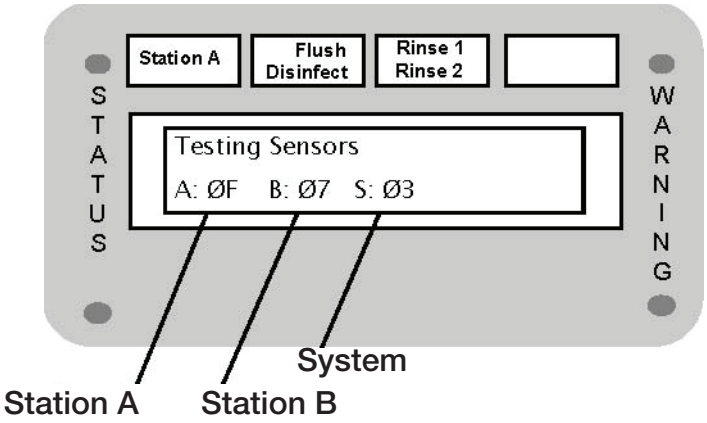
Function 93–Display Temperatures

Use this function to display the basin and reservoir temperatures. See Setup 13 for more information.



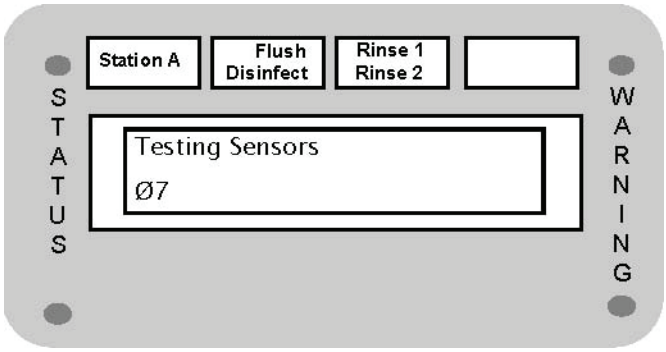
Function 94–Test Sensors

This function displays the output of all sensors.



Function 95-Test Sheath Tester

Use this function to test the sheath tester board. See the Maintenance section for more information.



Function 96 - Set Disinfection Time Format

Function 97 - Set Sanitization Time Format

Function 98 - Toggle DSD/SSD Bit. Not used in the DSD EDGE® Endoscope Reprocessor

Chapter 5

OPERATION

Introduction

This chapter explains how to startup and shut down the reprocessor, how to program the preprocessor for a delayed start sequence, how to leak test endoscopes and how to prepare and disinfect an endoscope.

Cycle Operation

Startup Phase

During start-up phase, the software monitors certain sensors. If any of the monitored sensors are not satisfied during start-up, an error message is displayed and the process is halted. To cancel the start-up phase, press the STOP key. To resume, resolve the error according to the error message displayed, press the STOP key, and then press the Start key. Please refer to the maintenance and troubleshooting section for appropriate instructions to resolve error messages.

If the leak tester is enabled, a 40 second sheath test is activated during the start-up phase. During that test the endoscope is pressurized to 160mmhg for 20 seconds then the pressure is monitored for the remaining 20 seconds. If the pressure drops below 50mmhg, a “Sheath Fail” error message is displayed and the process is halted. To cancel the start-up phase, press the STOP key. To resume, resolve the issue according to the error message displayed, press the STOP key, and then press the START key.

The cycle then proceeds with a default Flush Phase or an optional Wash Phase.

Flush Phase

The flush phase introduces fresh water through scope channels for a minimum of 30 seconds as well as into the basin via the basin port. Detergent can be injected into the channels prior to the 30 second minimum fresh water flush via SETUP 5. The default detergent injection time is 3 seconds (~9 ml). Please refer to the table in the Programming the Reprocessor Section for the appropriate dilution and timing settings. The flush time can also be increased above 30 seconds via SETUP 5. Refer to the Programming the Reprocessor Section. Note: During this phase, the incoming water temperature is monitored to ensure that the water temperature is within the proper range for disinfection. If the water temperature is below the minimum required for disinfection, water will continue to flow into the basin until either the minimum incoming water temperature is met or the step times out. This flush phase concludes by purging the scope channels with air and emptying the basin of water.

Wash Phase

The wash phase consists of up to two Soak segments. The operator has the choice to run one wash segment, two wash segments or no wash segments. Setting the Soak time above zero using Setup 5, disables the second segment. Note: If one or two wash segments are chosen, then the flush phase is skipped.

During Soak, the detergent is injected into the basin through the scope channels according to the programmed detergent injection time. The default detergent injection time is 3 seconds (~9ml). Please refer to the table in the Programming the Reprocessor section for the appropriate dilution and timing settings. After injection, water fills the basin and the endoscope is soaked in the basin for the programmed soak time. The basin is then drained while the endoscope channels are flushed with fresh water. A Rinse Soak period then follows which is identical to the soak period. However, no detergent is injected during this time.

Air Phase

The Air phase is simply a programmed time during which air is purged through the endoscope channels.

Note: Please refer to the Disinfection Cycle Chart for user programmable time settings, default state times, and time limitations.

Note: Every drain transaction is followed by an air purge where air is flushed through the endoscope channels and internal fluid lines. The Air LED on the control panel blinks during air purge.

Note: During each phase of the cycle, an LED illuminates to indicate the present phase. The Flush LED indicates that one of the wash phase segments is running.

Pre-start Inspection

Use the following procedure to inspect the reprocessor before startup.

1 Check the external pre-filters if installed on the incoming water supply. Replace any filters if the dynamic pressure drop across any filter is greater than 10 psi. Inspect the pressure gauges for pressure reading when water is flowing through the filters.

2 Check the detergent reservoir (if utilized) for proper detergent level. Add detergent, if necessary.

3 Check the alcohol reservoir (if utilized) for proper alcohol level. Add alcohol, if necessary.

CAUTION! For the alcohol and detergent bottles; remove, refill and replace each bottle (alcohol and detergent) separately to ensure the correct fluid is in reservoir.

Note: Allow 1 inch of space at the top of the detergent and alcohol reservoirs to accommodate the reservoir sensors.

4. Check the disinfectant Part A and Part B supply bottle expiration dates.
5. Check the time on the reprocessor display screen for accuracy. Reset the time, if necessary.
6. Verify the incoming dynamic water pressure by flowing water into the basin by pressing the SETUP button followed by entering 41 using the keypad and then pressing the ENTER button. The LCD display shall prompt "Water temp test?" Press the ENTER button to initiate water flow. As water flows into the basin, ensure that the dynamic water pressure at the inlet to the DSD EDGE® Endoscope Reprocessor is 35-40 psi (2.4-2.75 BAR).
7. While the water flows into the basin, verify that the incoming water temperature as indicated within the display is 35°C (±2°C). Refer to Figure 1 for an explanation of the four temperature readings within the LCD display.
8. Once the incoming water supply dynamic water pressure and temperature is verified, press the STOP button. The LCD will prompt "Basin drained?" Once the basin is completely drained, press STOP to close the drain valve and press STOP again to exit setup mode.

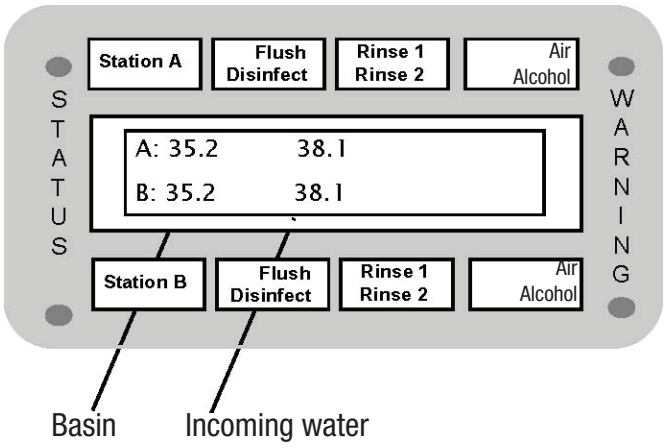


Figure 1: Display Temperature Screen

Disinfecting Endoscopes

Use the following procedure to prepare an endoscope for disinfecting, to run the disinfection process, and to complete the disinfection process.

Preparing the endoscope

1. Preclean the endoscope to remove any organic debris. Follow the manufacturer's instructions for precleaning, or refer to established professional guidelines. See "Endoscope Precleaning and Testing" in this chapter.
2. Remove all channel valves from the endoscope and connect the ports with appropriate hookup. Refer to the appropriate MEDIVATORS Hookup Guide for specific endoscope installation.
3. Position the endoscope in the reprocessor basin.
   - Position the control section of the endoscope in the right rear of the basin.
   - Position the light guide in the left front of the basin.
4. The distal end must not point upwards toward the floating lid.
   - The endoscope must be completely submerged when the basin is filled.
   - The endoscope must not contact the basin lid.
5. Attach the endoscope hookup connection to the basin connection. Verify there are no kinks in the hookup.

Warning! Periodically test the hookups to ensure there are no blockages and that the connections are secure. Verify condition of Hookups and replace if worn or damaged.

Caution! Use only MEDIVATORS supplied hookups with the DSD EDGE® endoscope reprocessor.

Caution! The hookups are not autoclavable and must be reprocessed by low temperature disinfection only.

Leak Testing

Use the following procedure to leak test an endoscope. Leak test adaptors are available for PENTAX®, OLYMPUS®, FUJIFILM™ and KARL STROZ® endoscopes.

Note: This automated test is not a substitute for the endoscope manufacturer's manual leak test. Follow the manufacturer's instructions when performing a manual test.

1. Install the waterproof caps and leak tester adaptors on the endoscope following the endoscope manufacturer's instructions.
2. Load the endoscope into the reprocessor.
   - Connect the leak tester hookup between the endoscope and the basin outlet.
3. Select the desired disinfection cycle. Press the START button on the reprocessor control panel.
4. The endoscope inflates for 20 seconds to 160mmHg (3psi). Endoscope pressure is monitored for another 20 seconds. -If the pressure decreases below the 50mmHg (1psi) reading within this period, the warning LED on the reprocessor control panel blinks, the system activates an alarm and the message "Sheath Fail" is displayed. Press the STOP button to end the cycle. The cycle is aborted.
   - If no leak is detected, the disinfection cycle starts as normal. No indication is shown.
5. Pressure is maintained during the disinfection cycle to detect small leaks and prevent fluid ingression. If a small leak is detected, the reprocessor will continue the cycle then alert the operator of any detected leaks at the end of the cycle.
   - Press the STOP button to acknowledge the warning.
6. The endoscope automatically deflates at the end of the cycle.
7. The log printout indicates if the leak tester option is disabled, or indicates any leak test failure.

Caution! The leak test adaptor must be disconnected and removed from the basin when not in use to avoid potential fluid ingression.

Running the Disinfection Process

1. Place the floating lid on the basin. Verify the endoscope or hookup does not protrude from the basin or contact the floating basin lid.
2. Close the reprocessor lid.
3. Press the STATION SELECT button to choose station A or station B.
4. Press the ID DATA button, then enter the ID Data (if required for printed log).
   - Enter up to ten digits for the endoscope serial number, then press the ENTER button.
   - Enter up to ten digits for the operator ID number, then press the ENTER button.
   - Enter up to ten digits for the patient ID number, then press the ENTER button.
   - Enter up to ten digits for the physician ID number, then press the ENTER button.
5. Select the desired disinfection program on the reprocessor control panel.
   - Select 0 for the default program.
   - Select 1-9 for a custom program.
6. Press the START button.
   - The disinfection program starts.
   - If the leak tester option is enabled, there is a 40 second delay at the beginning of the cycle.
7. During the detergent flush cycle, verify the endoscope connections and plugs are properly connected.
   - Verify fluid flows through the channels.
   - Verify fluid flows from the distal end of the endoscope.
   - Verify there are no leaks at the channel fittings and adaptors.
8. Indicators on the control panel display status information while the reprocessor processes the endoscope.

Note: To interrupt the process at any time, or to clear errors, refer to the Process Interruption procedure in Chapter 5 of this manual.

Caution! Do Not open lid(s) during disinfection process. Exposure to disinfectant vapor can cause sensitization.

Completing the Disinfection Process

When the disinfection process is complete, the LCD screen will prompt the operator to verify the disinfectant minimum recommended concentration. The operator must dip a test strip into the disinfectant sample port located within the front-left corner of the respective basin. If the test strip indicates that the disinfectant minimum recommended concentration was met for the cycle, the operator must then press the “HLD Pass” button on the control panel. If the test strip indicates that the disinfectant minimum recommended concentration was not met during that cycle, the operator shall then press the “HLD Fail” button on the control panel.

1. After ten seconds the process indicator light illuminates and the message “Completed” displays on the LCD screen.
   - If automatic log printing is enabled, the log is printed.
   - If the MRC was not met, re-run the cycle.
2. For optional lid locks: press the STOP button to unlatch the lid.
3. Open the reprocessor lid.
4. Remove the basin floating lid.
5. Verify the hookups are securely connected to the endoscope.
   - If the connections are loose, reconnect the hookups and repeat the cycle to ensure the endoscope is properly disinfected and rinsed.
6. Disconnect the hookup connectors from the endoscope.
7. Remove the endoscope from the basin.

Process Interruption

A process interruption may occur due to a system interruption, or initiated by the operator.

System Interruption

A system interruption may be caused by loss of water or air, loss of power, or by a lack of available Part A and Part B disinfectant components.

Note: During an operating cycle, reprocessors with optional lid locks cannot be opened except by means of a service code.

1. Correct the error, then press the START button.
   - The reprocessor continues the cycle from the point of interruption.
   - If the interruption is caused by a power outage, the reprocessor automatically restarts the cycle when power is restored. A “Power On” message will be indicated in the log.

Operator Initiated Interruption

1. Press the STATION SELECT button to choose station A or station B.
2. Terminate Cycle: Press the CANCEL button, then the ENTER button. The present cycle is aborted. The reprocessor fails to a safe mode and the endoscope must be reprocessed.
   - If the cycle is terminated, an “Aborted” message will be displayed. The endoscope should not be used unless a “Cycle Completed” message is displayed.

Service: If the error recurs, or cannot be corrected, refer to the Troubleshooting chapter.

3. Interrupt Cycle: Press the STATION SELECT button, then the STOP button.
   - To resume the cycle press the START button. The cycle proceeds as normal.

Shutdown

Use the following process to shutdown the reprocessor at the end of the day.

1. Turn the external air source to OFF (if applicable).
2. Close the incoming water line shutoff valve.
3. Sanitize the reprocessor upper basins and basin lids with an EPA-registered sanitizer, such as properly diluted ACTRIL® Cold Sterilant. Follow the sanitizer manufacturer's recommendations for proper use.

Warning! Avoid possible chemical burns. Always wear personal protective equipment (gloves, goggles) when handling sanitizer.

Caution! Avoid damage to the reprocessor. Do not allow sanitizer to contact any metal components.

4. Check the detergent reservoirs and alcohol reservoirs for proper level.
5. Refill the alcohol reservoir, if necessary.
6. Clean and refill the detergent reservoir, if used.
   - Clean the reservoir cap, bracket and detergent reservoir.
   - Flush the reservoir thoroughly with hot water.
   - Refill the reservoir with detergent.

NOTES

Chapter 6

MAINTENANCE

General

This chapter contains basic maintenance procedures. Always refer to Safety section in the Introduction chapter before attempting to service the reprocessor.

▼ LEVELING

The reprocessor must be installed on a level surface or be adjusted to level. Adjust the leveling pads after unpacking the reprocessor.

1. Place a bubble level on the basin surface in position “A”.
2. Adjust the rear leveling pads until the bubble is centered in the level glass.
3. Move the bubble level to position “B”.
4. Adjust the front leveling pads (flathead screws) until the bubble is centered in the level glass.
5. Verify the reprocessor is level.
6. Refit the drawer assembly as described on the next page.

Figure. 1: Locate drawer retaining clips on each side of the drawer. Lift clips and pull drawer from runners, place to one side.

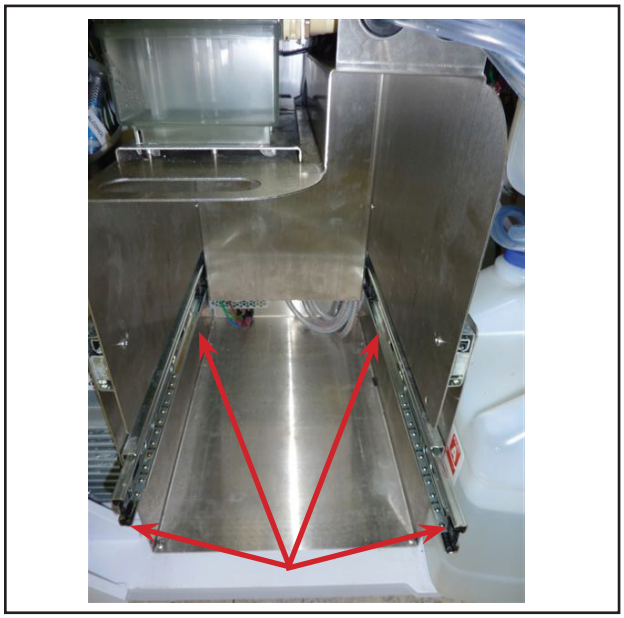


Figure. 2: Locate and remove the four (4) screws that secure the frame. Withdraw the frame and place to one side

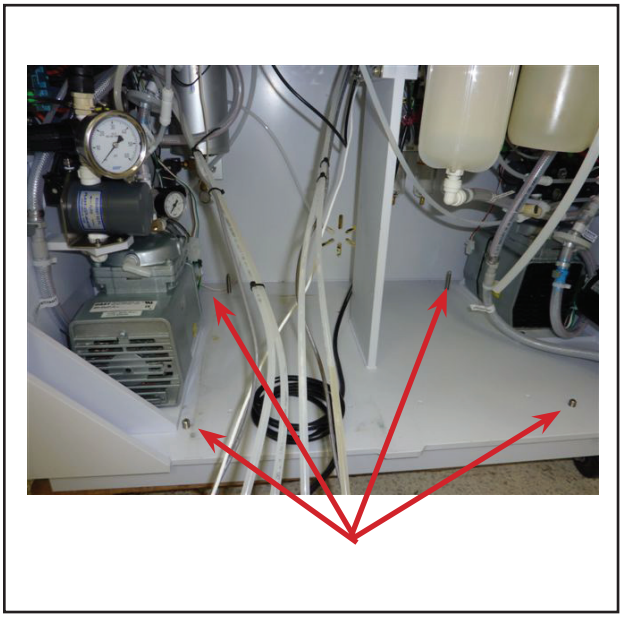


Figure. 3: Locate and adjust the leveling screws as necessary to ensure the fluid level in the basin.

▼ COLLET COUPLING DISCONNECTION/CONNECTION

These instructions apply to all collet couplings used throughout the machine.

1. Depress locking ring toward fitting and pull tubing out of connector.
    - Release tool will aid in cases of fittings in close proximity to one another.
2. To reconnect tubing into collet end, insert and apply pressure to tube until tube slides past O-ring and “bottoms out.”
3. Pull on tubing to ensure that collet has engaged.
4. Check for leaking after pressure has been reapplied.
5. If tubing is replaced, ensure that the tube is square-cut and not crushed or distorted.

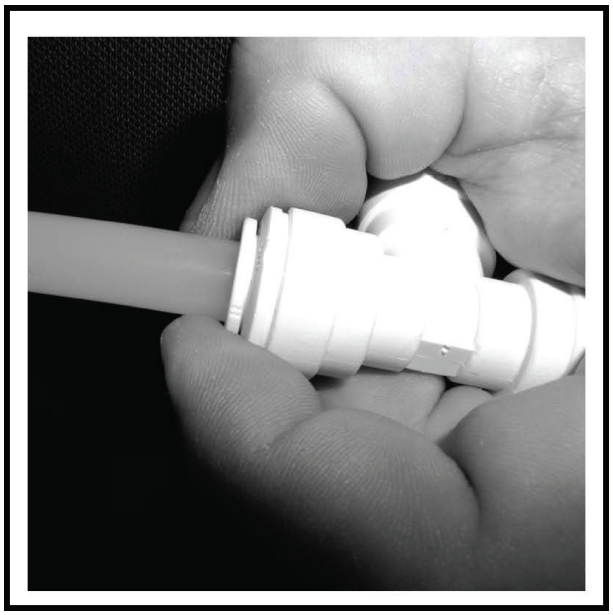


Figure 4: Depress locking ring

Figure 5: Insert tube

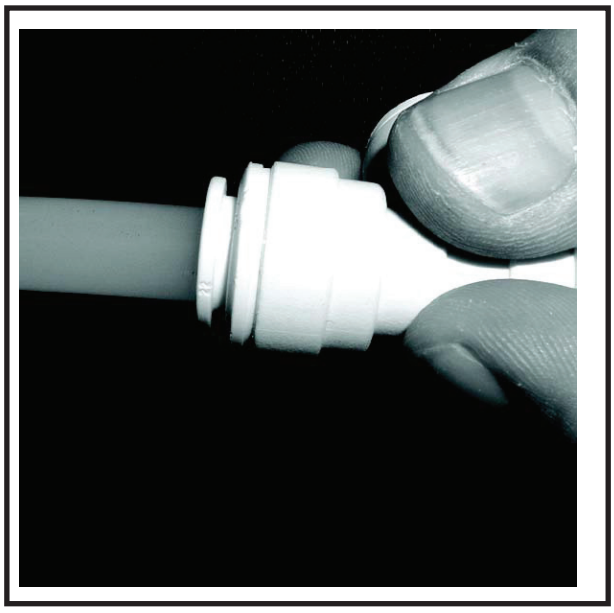


Figure 6: Locking ring out

▼ DISINFECTANT FILTER INSPECTION / CLEAN

The filter is located below the overflow valve and is part of the drain manifold assembly. (See photo) This should be checked and cleaned on a monthly basis.

1. Place a container under the filter to catch any excess liquid
2. Remove the filter cover by unscrewing in a counter-clockwise direction.
3. Remove filter screen by pulling from the cap.
4. Wash filter screen under running water to remove any debris.
5. Replace filter screen in housing cap, ensuring that O-rings are in the correct locations.
6. Replace filter cover and hand tighten in clockwise direction.

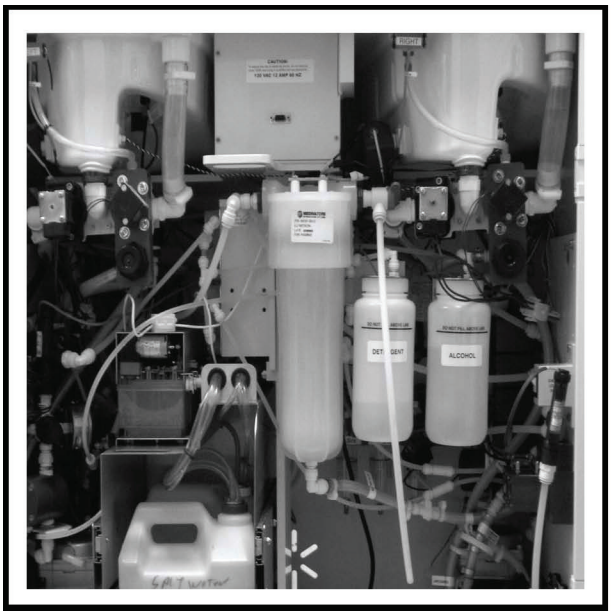


Figure. 7: Disinfectant Filter locations

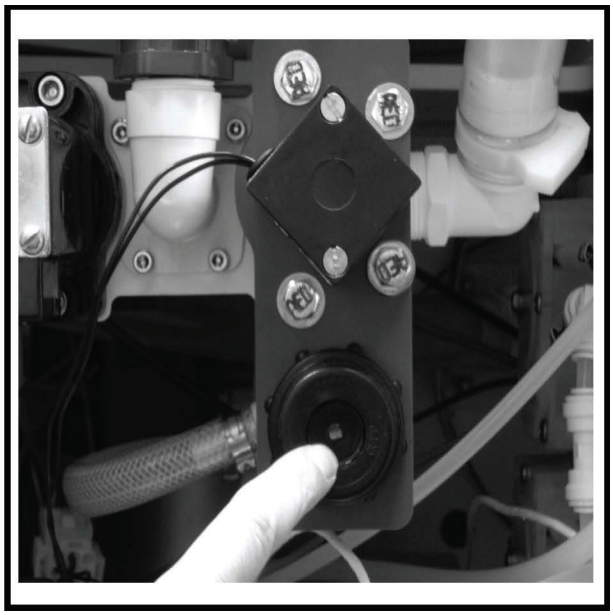


Figure 8: Disinfectant filter housing

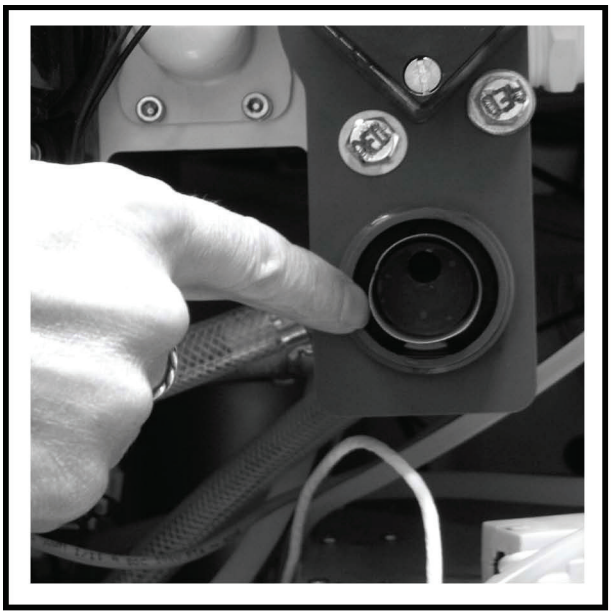


Figure 9: Disinfectant filter

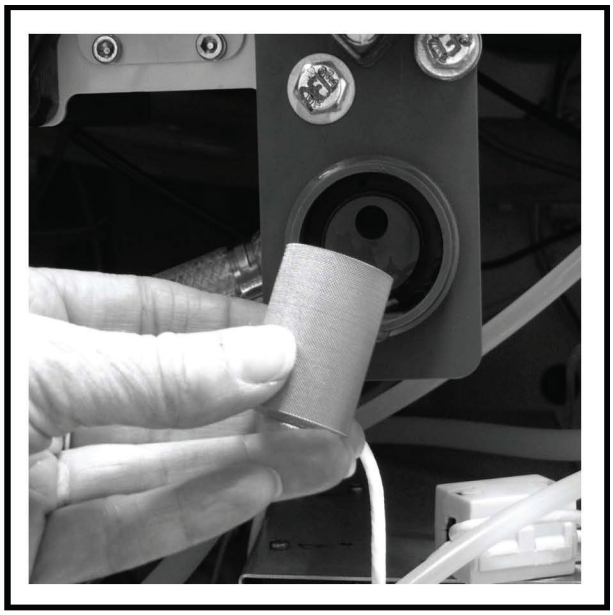


Figure 10: Clean filter and reinstall

▼ INTERNAL 0.2 MICRON WATER FILTER–REMOVAL

The disinfector must be in idle state to perform this procedure.

1. Close the incoming water supply valve to the disinfector.
2. Drain excess water from the filter housing.
   - Place a container under the water filter inlet tube.
   - Disconnect the water filter inlet quick-connect from incoming water supply line.
   - Connect the accessory hose to the water filter inlet tube.
   - Open the filter bleeder valve and drain the water from the filter canister.
3. Remove the water filter cartridge.

Warning! **Always wear gloves when handling the filter.**

   - Loosen and remove the water filter housing.
   - Rotate the filter counterclockwise to unlock.
   - Remove the filter and discard in accordance with institution guidelines.

Figure. 11: Internal water filter location

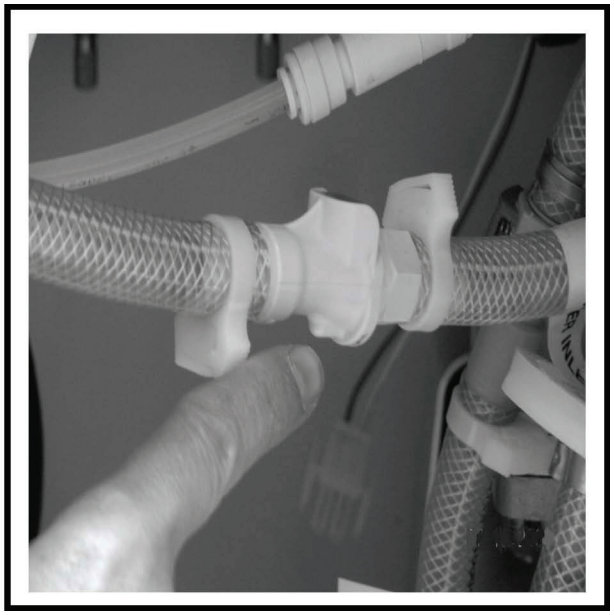


Figure 12: Disconnect the water inlet, attach the accessory hose

Figure. 13: Loosen the housing

▼ □INTERNAL WATER FILTER–REPLACE

1. Install the new water filter.

Warning! Always wear gloves when handling the filter.

   - Insert the filter into the housing cap.
   - Turn the filter clockwise until the tabs locks into the cap.

2. Wipe the filter housing clean with a lint-free cloth.
3. Install the filter housing onto the housing cap.
   - Apply an NSF-approved silicone lubricant to the housing O-ring to aid assembly and sealing.
   - Tighten the housing into the cap by hand. Do not overtighten.
4. Reconnect the water inlet line.
5. Close the bleeder valve on the filter housing.
6. Slowly turn on the water supply and check for leaks.
7. Press the SETUP button.
8. Press 43 on the keypad, then press ENTER. This will open the incoming water supply solenoid valve providing a water supply to the on-board .2 micron filter housing. Note: A counter on the LCD display will begin to count down from 250 to 0 in one second increments. After 250 seconds, the incoming water supply solenoid valve will automatically close if not manually closed sooner as explained within step 10.
9. Direct the purge line from the top of the on-board .2 micron water filter housing into a container that hold a minimum of 1 liter of liquid.
10. Slowly open the shut-off valve located on the purge line from the on-board .2 micron filter housing until the air is purged from the filter housing and a steady stream of water flows from the purge line.
11. After closing the shut-off valve, tap the purge line to promote the draining of the residual water within the purge line into the container.
12. Remove the container and empty.
13. Press the STOP button to close the incoming water supply solenoid valve and then press the STOP button again to exit the SETUP menu.
14. Perform the Water Line Disinfect procedure as described in the Operator Controls chapter.

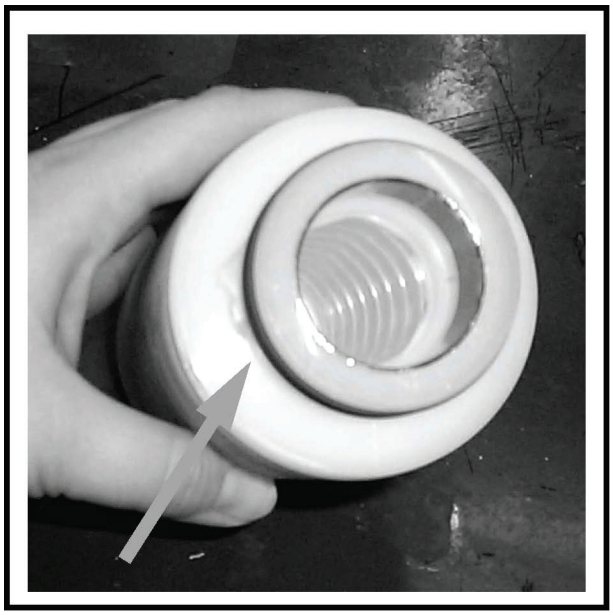


Figure 14: Install the new water filter

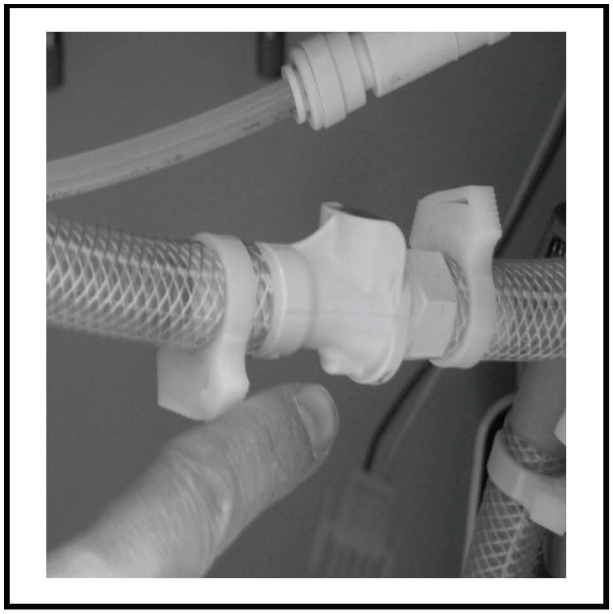


Figure 15: Reconnect the water filter

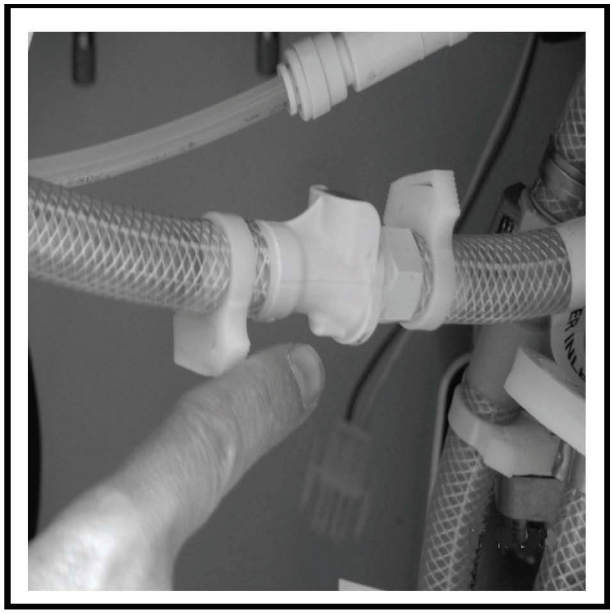


Figure 16: Filter installed

▼ PRE-FILTER REPLACEMENT

Verify both station are idle before performing this procedure..

1. Close Incoming Water Line.
2. Open Internal Water Supply Valve.
   - Press the SETUP button. Press 43 on the keypad, then press ENTER. This will open the incoming water supply solenoid vlave providing a water supply to the on-board 0.2 micron filter housing.

NOTE: A counter on the LCD display will begin to count down from 250 to 0 in one second increments. After 250 seconds, the incoming water supply solenoid valve will automatically close if not manually closed sooner.

3. Drain Purge Line
   - Direct the purge line from the top of the on-board 0.2 micron water filter housing into a container that holds a minimum of 1 liter of liquid.
   - Slowly open the shut-off valve located on the purge line from the on-board 0.2 nmicron filter housing until the air is purged from the filter housing and a steady stream of water flows from the purge lines.
   - After closing the air bleed valve, tap the purge line to promote the draining of the residual water within the purge line into the container.
   - Remove the container and empty.
   - Press the STOP button to close the incoming water supply solenoid valve and then press the STOP button again to exit the SETUP menu.
4. Replace Pre-filters
   - Use the fitler wrench, if necessary, to remove the pre-filter housings.
   - Wearing gloves, remove and discard the filters.
   - Clean housings using soap and water and then rinse thoroughly.
   - Replace the corresponding fitler(s).
   - Replace the filter housing. You may need to moisten the O-ring located at the top of the filter housings with a water-based lubricant. Make sure that the O-ring is at the top and in place in the top of the housing.
   - Hand tighten the filter housings; DO NOT use the filter wrench.
5. Open Incomig Water Line Slowly
6. Open Internal Water Supply Valve
   - Follow the instructions in Step 2.
7. Drain Purge Line
   - Follow the instructions in Step 3.
8. Check for Leaks
   - If a leak is found, close the incoming water supply line and hand-tighten the housing again.
   - Open the water line again and check for leaks.

Figure 17. LCD Display

Figure 18: Drain Purge Line

Figure 19: Replace Pre-filters

▼ PRINTER PAPER–REPLACE

Use the following procedure to replace the printer paper. Only use MEDIVATORS supplied paper.

1. Raise the printer compartment cover on the reprocessor and remove the printer from the compartment.
2. Remove the used paper roll.
   - Press the paper feed switch to advance the paper beyond the cutting blade.
   - Cut any remaining paper on the roll from the printer.
   - Pull the remaining paper toward the paper cutter, through the printer mechanism.

> **Caution!** Avoid damaging the printer mechanism. Never pull paper from the back of the printer. Always pull forward, towards the cutting blade.

3. Install the new paper roll.
   - Unroll several inches of paper from the new roll and trim the leading edge even.
   - Feed the paper through the printer feed slot.
   - Press and hold the paper feed switch until the paper exits the top of the printer.
   - Release the switch after several inches are exposed.
4. Insert the spindle through the paper roll and position the roll in the slots.
   - Verify the roll turns freely. Paper jams could damage the printer mechanism.
5. Pull the exposed paper through the slot in the printer cover and lower the cover.
6. Replace the printer in the printer compartment. The printer is ready for normal use.

Figure 20: Printer compartment

Figure 21: Advance paper

Figure 22: Feed paper through slot

Figure 23: Install new roll

▼ PRINTER RIBBON–REPLACE

Replace the ribbon before the printing becomes difficult to read. Use the following procedure to replace the printer ribbon.

1. Raise the printer compartment cover on the reprocessor and remove the printer from the compartment.
2. Unplug the printer power cable.
3. Remove the printer cover.
   - Press down on grooved corners until the cover rotates upward.
   - Lift the printer cover off the printer case.
4. Replace the cartridge.
   - Push down on the ribbon cartridge, marked PUSH.
   - Remove the cartridge and discard.
5. Install the new MEDIVATORS approved ribbon cartridge.
   - Align the cartridge in the slot and press down until firmly seated.
   - If there is paper in the printer, slide the paper between the cartridge and the ink ribbon before seating the cartridge in place.
   - Turn the small knob clockwise to adjust the ribbon tension.

Caution! Prevent ink stains. Do not allow the ribbon to contact the printer case. Wipe any ink from the case immediately to prevent stains.

6. Reinstall the printer cover.
7. Replace the printer in the printer compartment.
8. Turn on the printer. The printer is ready for normal use.

Figure 24: Remove the printer cover

Figure 25: Remove the cartridge

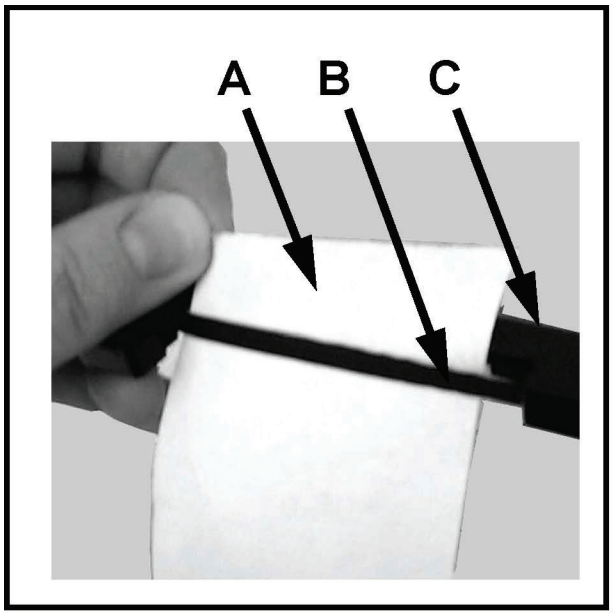


Figure 26: Feed paper (A) between the ribbon (B) and cartridge (C)

Figure 27: Adjust the tension

▼ AIR FILTER–REPLACE

1. Locate the air filters.
2. Disconnect the quick-connect fittings.
3. Replace the old filter with a new filter.
    - Verify that the inlet of the filter faces the compressor.
4. Discard the old filters.
5. Record the date of change in the log.

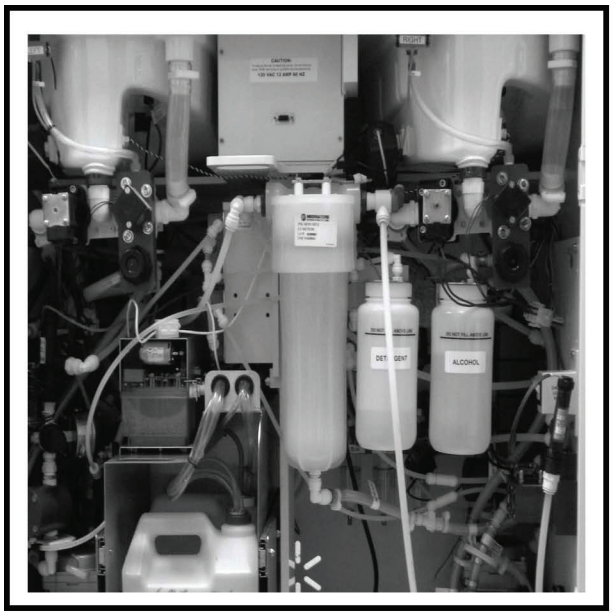


Figure 28: Filter locations

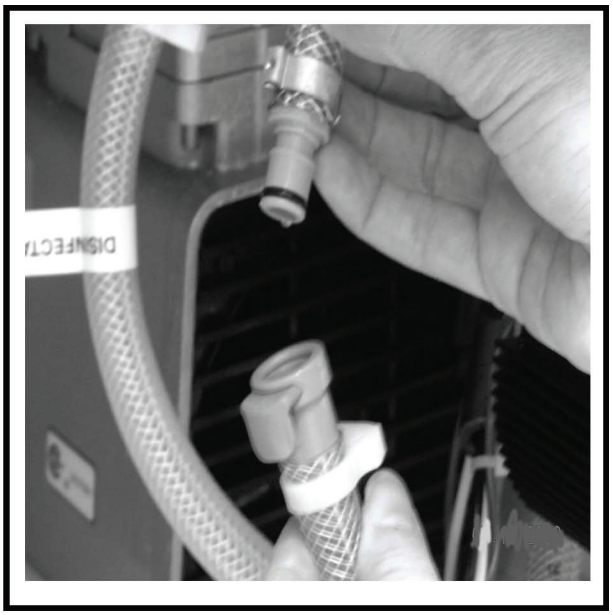


Figure 29: Disconnect the filter

Figure 30: Verify inlet side

▼ FLOW SENSOR–CLEAN

1. Locate the flow sensors.
2. Remove the flow sensor and disassemble.
    - Disconnect the sensor cable from the sensor board.
    - Release the CPC fitting at the bottom of the flow sensor.
    - Remove the flow sensor assembly by releasing the tube coupling.
    - Remove the plug from the flow sensor assembly.
    - Remove the plunger from inside the flow sensor assembly.
3. Clean the flow sensor.
    - Wipe the plunger using a clean cloth.
    - Push a clean cloth through the barrel of the flow sensor.
4. Re-assemble the flow sensor.
    - Replace the plunger into the flow sensor with the flat end in first.
    - Inspect the O-rings of the plug, side coupling and bottom coupling for damage.
    - Apply silicon grease to each O-ring and reassemble.
5. Reinstall flow sensor.

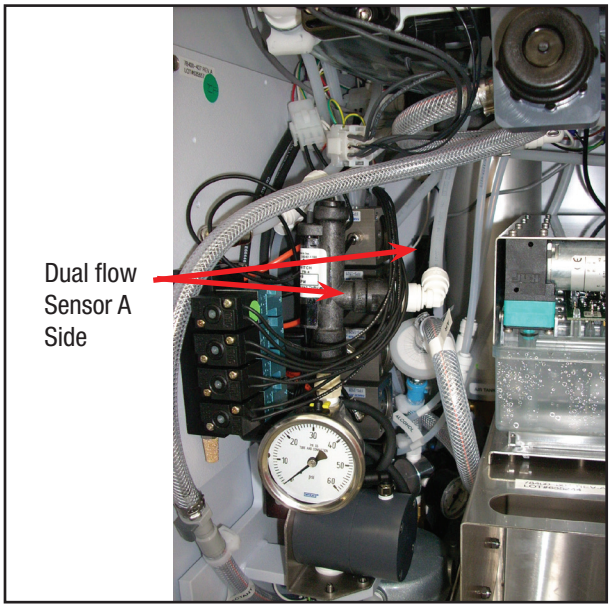


Figure 31: Flow sensor position A side

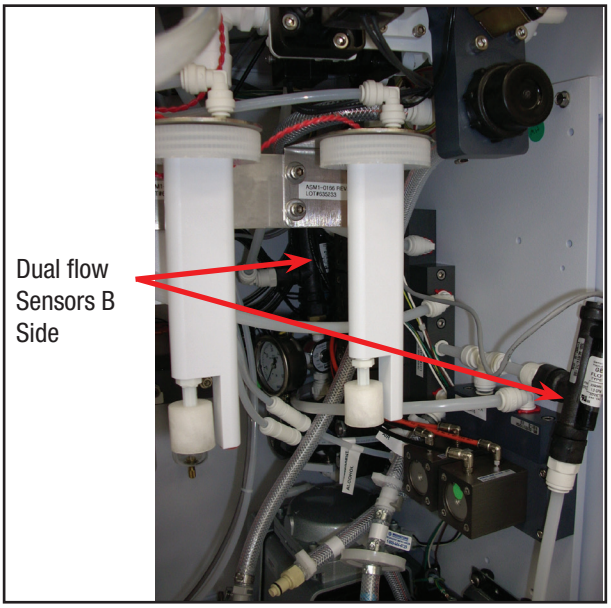


Figure 32: Flow sensor position B side

▼ REPLACING THE FUSES

1. Unplug the reprocessor from the AC power receptacle.
2. Remove the access screw from the front underside of the control panel console.
3. Open control panel cover to access the electronics.
4. Inspect visually or electrically to determine if fuse is damaged.
5. Replace defective or blown fuses.
6. Close control panel cover.
7. Replace the access screw.
8. Plug the power cord into the power receptacle.

Note: All fuses are slow blow. Do not use any other type.

Key	120V	240V	Size
F1	3.15 A	3.15 A	5 x 20 mm
F2	5.0 A	4.0 A	5 x 20 mm
F3	3.15 A	2.0 A	5 x 20 mm
Power Supply	1. 5 A	1.5 A	3 AG

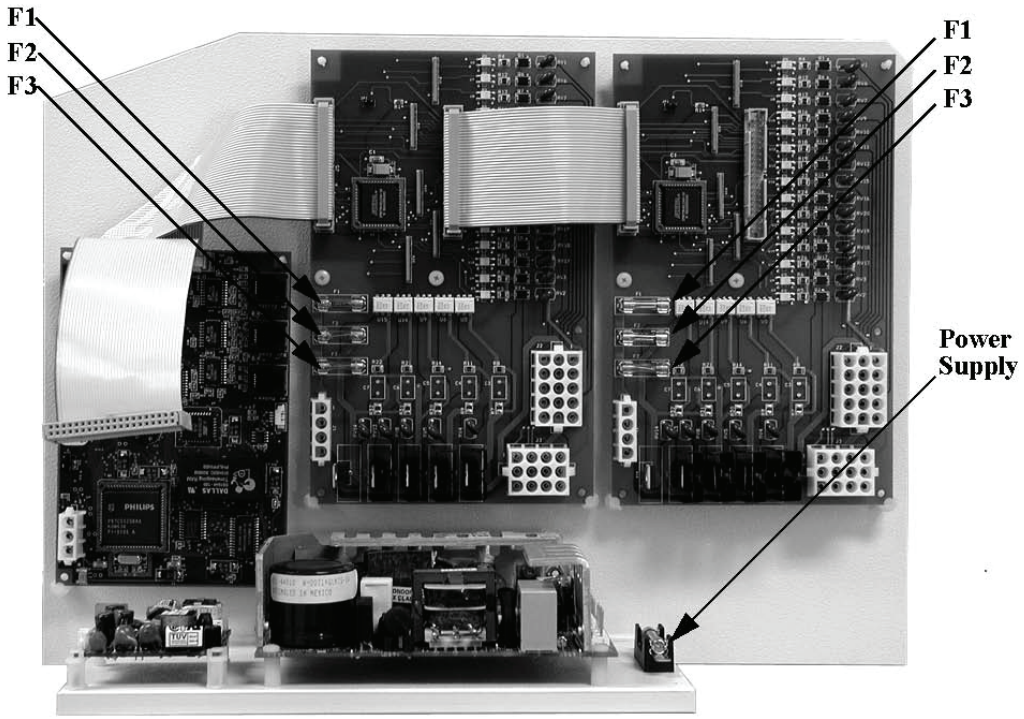


Figure 33: Fuse locations

▼ LEAK TESTER OPTION–CHECK

1. Connect pressure gauge to leak test outlet in “A” upper chamber.
2. Test the Leak Test Board.
   - Select side “A”, SETUP 88,code 135
   - 51 ENTER, 54 ENTER to setup test
   - 95 ENTER. Display will show number 3C.
   - Gradually increase the pressure using the inflator. As the pressure increases, the display will read:
     - 34 if pressure is greater than 1 psi -31 if pressure is greater than 3 psi
   - Gradually decrease the pressure using the toggle on the back of the inflator. As the pressure decreases, the display will read: -35 if pressure is less than 3 psi -3F if pressure is less than 1 psi
   - Press CANCEL.
3. Test Leak Tester system.
   - Press 56 ENTER to verify 3 psi control pressure.
   - Press 57 ENTER to verify 1 psi hold pressure.
   - Bleed some air out of the system using the toggle and ensure that the tester maintains 1 psi.
   - Press 50 ENTER to vent the system.
4. Internal Leak Test.
   - Press 56 ENTER.
   - Allow the pressure to stabilize.
   - Press 57 ENTER.
   - Monitor pressure for a minimum of 5 minutes. The pressure must not increase or decrease more than 4 mmHg.
   - Record the pressure and time on the test report.
   - Press 50 ENTER to vent the system
5. Repeat for Station “B”.
   - During the test of the Leak Test Board for Station “B”, the display will show the following readings:
     - As the pressure increases, the display will read: 1C if pressure is greater than 1 psi, 8C if pressure is greater than 3 psi.
     - As the pressure decreases, the display will read: 9C if pressure is less than 3 psi, FC if pressure is less than 1 psi.

Figure 34: Connect pressure gauge

Figure 35: Bleed some air

▼ MANUALLY UNLOCKING THE LID (FEATURE OPTION)

1. Locate the lidlock inside the cabinet.
2. Loosen the screw that holds the dial, using a small Phillips screwdriver.
3. Rotate the dial of the lidlock 180° clockwise.
4. Open the lid of the reprocessor.
5. Rotate the dial back in place and tighten screw.

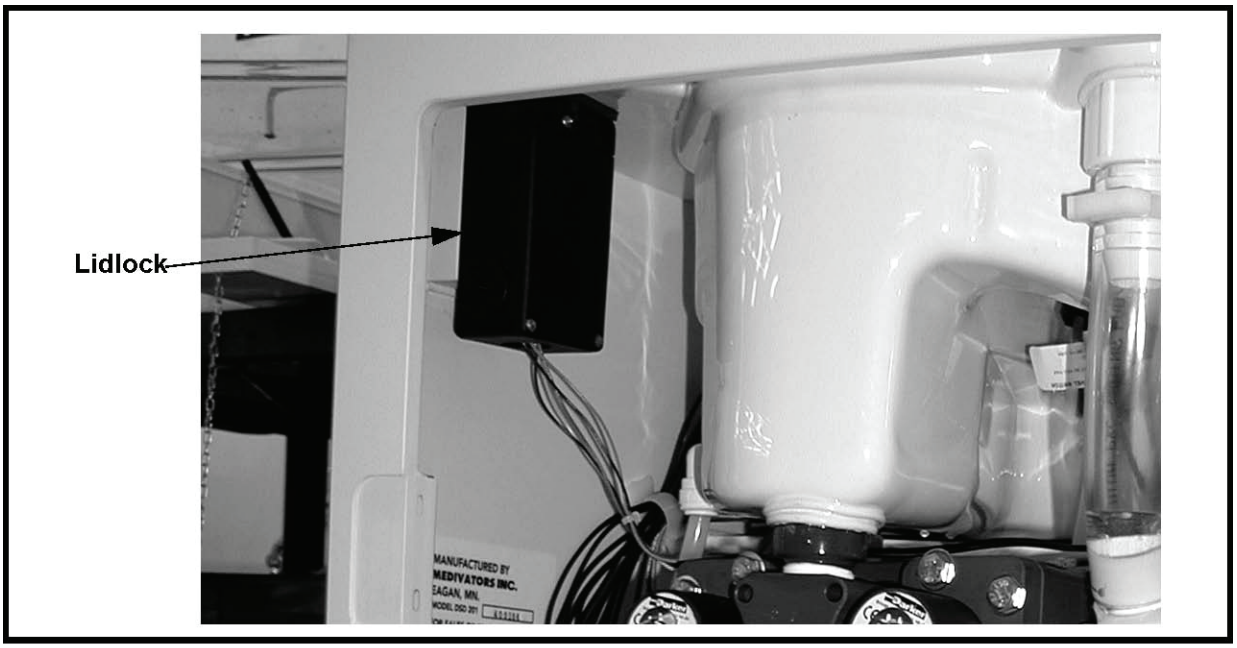


Figure 36: Lidlock location

Figure 37: Lidlock

Chapter 7

TROUBLESHOOTING

Troubleshooting Guide

Use this section to identify and correct operational problems. If none of the solutions correct the problem, or if the problem recurs, contact your customer support.

> Note: During a leak test, there is a 40 second delay at the start of the cycle. The disinfection cycle will not start until the leak test is complete.
> This is normal operation and is not considered an “error”.

Reprocessor does not start.

No power to the reprocessor.	Check the main power connection.
GFCI is tripped	Locate the GFCI on the inside back wall of the reprocessor. Press the reset button on the GFCI. If the GFCI cannot be reset, contact your customer support.
Main circuit breaker is tripped.....	Reset the circuit breaker. If the circuit breaker cannot be reset, contact your customer support.
Defective connection to reprocessor.....	Unplug the reprocessor from wall socket. Check the power cable for damage.
Defective connection to motherboard.....	Check connections between the control panel and the motherboard. Replace defective components, if necessary.
Blown power supply fuse	Check the power supply fuse, replace if necessary

Disinfection cycle does not start.

Software/hardware locked	Disconnect then reconnect the main power to reset the system.
Keypad not responding	Check the keypad connection. Replace the ribbon cable, if necessary.
Control panel defective.....	Replace the control panel.

Slow water fill into basin.

Air pressure insufficient to open valves.....	Verify the compressor is working correctly. Check the external air regulator on non-compressor reprocessors. Contact your Facility Maintenance representative.
Insufficient water supply pressure, flow rate.....	Contact your location building maintenance.
External water pre-filter plugged.....	Replace the filter cartridge.
Internal water filter is plugged.....	If the pressure is low, replace the 0.2micron bio-retentive water filter.
Incoming water regulator setting is incorrect	Check the regulator setting. The setting must be flowing pressure of 35 to 40psi. Do not adjust the regulator if the setting is correct—check for a plugged filter.

Air pressure switch harness disconnected.....	Check the harness for proper connection. Also, check for damage, loose wires.
Water line valve not opening	Repair or replace the component.
Chamber valve not opening	Repair or replace the component.
Air manifold not operating	Repair or replace the component.
Valve drive board defective	Check the valve drive board. Replace if necessary.
Harness disconnected.....	Check the harness connections. Replace defective harness.
Air trapped in filter housing.....	Bleed air from the housing.

Slow disinfectant fill into basin.

Air pressure insufficient to open valves.....	Verify the compressor is working correctly. Check the external air regulator on non-compressor reprocessors. Contact your Facility Maintenance representative.
Disinfectant screen plugged	Clean the filter.
Air pressure switch harness disconnected.....	Check the harness for proper connection. Also, check for damage, loose wires.
Disinfectant supply valve not opening.....	Repair or replace the component.
Chamber valve not opening	Repair or replace the component.
Air manifold not operating	Repair or replace the component.
Valve drive board defective	Check the valve drive board. Replace if necessary.
Harness disconnected.....	Check the harness connections. Replace defective harness.

Water flows constantly from hookups.

Water valve not sealing correctly.....	Shut off the water supply and contact customer support.

Water does not drain from basin during flush or rinse.

Drain valve is defective.....	Repair or replace the drain valve.
External drain line kinked.....	Repair the drain line.
Drain line plugged	Clean the drain line or replace the line, if necessary.
Basin drain screen plugged	Clean the basin screen drain.

Scopes still wet at end of cycle.

Insufficient air flow.....	Check the compressor for proper operation.
Air valve not opening	Repair or replace the component.
Compressor vent valve open/leaking.....	Repair or replace the vent valve.
Chamber valves leaking.....	Repair or replace the component.

Reprocessor lid does not open on units with optional lidlocks.

Lidlock remains activated.....	Press the “STOP” button and enter the service code to deactivate the lidlocks.
Lidlock defective	Replace the lidlock.
Harness disconnected/defective.....	Check the connection. Replace a defective harness.
Digital I/O board defective	Replace the I/O board.
24/28V power supply defective	Replace the power supply.

No air after cycle.

Incorrect air program setting.....	Check the air setting in the Setup menu (Setup 5).
Excessive fluid remaining in endoscope channels	Check for correct compressor operation.

LCD screen unreadable.

Contrast out of adjustment.....	Use the Diagnostic function 26 to adjust contrast.
Ribbon cable disconnected, damaged.....	Check the ribbon cable between the LCD screen and the control panel. Reconnect a loose cable, or replace a damaged cable.
LCD screen failure.....	Replace the control panel.

Printer does not operate.

No power to reprocessor	See “Reprocessor does not start”.
Power supply unplugged.....	Check the power supply connection is plugged into the outlet in the reprocessor.
Printer ribbon is jammed.....	Check the printer ribbon. Open the printer and re-align the jammed ribbon. Rotate the knob to adjust the ribbon tension.
Printer paper is jammed	Check the printer paper. Open the printer and remove the paper jam. Press the paper feed switch to feed paper through the printer cover.
Printer connection is disconnected	Check the printer cable connection. Verify the connector is plugged in and seated tightly. Replace a damaged cable.
Printer damaged or defective	Replace the printer.
Defective motherboard	Replace the motherboard.

Printing unreadable.

Printer ribbon is infrequently used.....	Press the paper feed switch to advance the printer ribbon to a new section.
Printer ribbon worn.....	Replace the printer ribbon.

Error and Warning Messages

Error messages are displayed on the LCD screen to alert the operator to operational malfunctions and/or operational warnings (see the Appendix for message definitions). If none of the solutions correct the problem, or if the problem recurs, contact your customer support.

"Bas Sen Err" is displayed.

Incoming water pressure too high.....	Verify water pressure is set at 35-40 PSI.
Fluids on basin sensor.....	Clean fluid droplets off sensor.
Basin fluid did not drain	Contact your customer support.
Drain line kinked	Check the line for kinks. Reposition, if necessary.

"Flow Sen Err" is displayed during initial start.

Flow sensor stuck in the "on" position	Press the STOP button to clear the error. Press the ADD AIR button to free the sensor.

"Lid Ajar" is displayed during initial start.

The reprocessor lid is open	Close the reprocessor lid. Verify there are no obstructions preventing the lid from completely closing. Press the START button to resume the cycle.

"Low Chamber" is displayed during disinfectant phase.

Disinfectant screen is plugged.....	Check the screen. Clean, if necessary.
Insufficient air pressure.....	Check that the compressor is working correctly. Check the external air regulator on non-compressor reprocessors. Contact your location building maintenance.
Air pressure switch harness disconnected.....	Check the harness for proper connection. Also, check for damage, loose wires.
Debris in the filter connections.....	Remove the filter and check the connections for debris. Clean the connections and replace the filter.

"Low Chamber" is displayed during disinfectant phase or rinse phase.

Insufficient air pressure.....	Check that the compressor is working correctly. Check the external air regulator on non-compressor reprocessors. Contact your location building maintenance.
Insufficient water supply pressure, flow rate.....	Contact your location building maintenance.
External water pre-filter plugged.....	Replace the filter cartridge.
Internal water filter is plugged.....	Replace the water filter.
Incoming water regulator setting is incorrect	Check the regulator setting. The setting must be 35 to 40psi. Do not adjust the regulator if the setting is correct—check for a plugged filter.
Air pressure switch harness disconnected.....	Check the harness for proper connection. Also, check for damage, loose wires.

"No Air Flow" is displayed.

Air compressor is not working.....	Contact your customer support.
Air filter is blocked	Replace the filter.
Hookup is disconnected or kinked	Verify the hookup is not kinked and reconnect.
Air filter is disconnected.....	Verify the air filter is connected.
Insufficient external air pressure.....	Contact your customer support.

“No Fluid Flow” is displayed during disinfect phase.

Disinfectant screen is clogged.....	Clean the disinfectant screen.
Disinfectant supply valve defective.....	Repair or replace the component.
Scope to basin connection disconnected.....	Reconnect and restart the cycle.
Hookup is pinched or kinked.....	Check for pinched or kinked hookup. Cancel the cycle, then reposition the hookup. Restart the cycle.
Pump does not operate.....	Check that the disinfectant filter is connected and that pump is primed. Replace if necessary.
Scope channel is blocked.....	Remove scope and send for repair.
Sensor harness disconnected/defective.....	Check the sensor harness connection. Replace a defective harness.
Sensor board defective.....	Replace the sensor board.
Sensor defective.....	Verify proper fluid flow. Replace the sensor.

“No Fluid Flow” is displayed during flush or rinse phase.

Scope to basin connection disconnected.....	Reconnect and restart the cycle.
Water pressure too low.....	Pressure must be between 35-40psi (2.4 - 2.75bar).
Prefilter/internal filter clogged.....	Change the filter.
Air lock in the water filter.....	Open the bleeder valve on the filter to purge air.
Water filter is clogged.....	Check the water pressure at inlet and outlet regulators. Lower than normal pressure may indicate a clogged filter. Replace the filter.

“No Fluid Flow” is displayed during flush or rinse phase. ***(continued)***

Air pressure switch harness disconnected.....	Check the harness for proper connection. Also, check for damage, loose wires.
Sensor harness disconnected/defective.....	Check the sensor harness connection. Replace a defective harness.
Sensor board defective.....	Replace the sensor board.
Sensor defective.....	Verify proper fluid flow. Replace the sensor.

“No Fluid Fl2” is displayed.

Disinfection filter clogged	Clean filter.
Restriction in drain.....	Clean drain screen in basin.

“Res T High” is displayed.

Incoming water pressure to high	Adjust incoming water temperature.
Incorrect program temperature setting.....	Use Diagnostics 74 to enter value.
Thermistor defective	Repair or replace the component.

“Res T Low” is displayed.

Incoming water pressure to low	Adjust incoming water temperature.
Incorrect program temperature setting.....	Use Diagnostics 74 to enter value.
Thermistor defective	Repair or replace the component.
Heater turned off or defective	Turn heater on or replace. Check harness connection.

“Sheath Fail” is displayed (for optional leak tester only).

Large leak detected at beginning of cycle.....	Leak in scope. Allow the scope to reprocess, then remove scope and send for repair. Leak between connectors. Press STOP to cancel the cycle and open the lid locks. Check connection and reprocess scope.
Small leak detected during cycle	Leak in scope. Allow the scope to reprocess, then remove and manually leak test the scope.
Leak test adapter not connected.....	Press STOP to cancel the cycle and open the lid locks. Connect correct leak test adapter and reprocess scope.
Leak tester harness disconnected/defective	Check the leak tester harness connection. Replace a defective harness.
Leak tester board defective	Replace the leak tester board.
Leak tester assembly defective	Replace the leak tester assembly.

“Shth Sen Err” is displayed during initial start (for optional leak tester only).

Scope is pressurized during startup	Press STOP to cancel the cycle and open the lid locks. Disconnect the leak tester hookup to release the pressure. Reconnect the hookup.
Leak tester enabled, but option not present	Use Diagnostic 45 to disable leak tester option.

Leak tester board defective ..... Replace the leak tester board.

Leak tester defective ..... Replace the leak tester.

APPENDIX

Error Messages

Aborted ..... Indicates a cycle was manually aborted and not complete

Air Disabled ..... Indicates that the air flow sensor was disabled

A Dose Error ..... Alarm indicating that the SSG Part A dosing reservoir has timed out and not all chemistry was delivered

Bas Disabled..... Indicates that the basin level sensor was disabled

Bas Sen Err..... Indicates that the basin level sensor is reporting a full basin at the start of a cycle (basin should be empty) or incoming water pressure is above 40 PSI

Basin Temp..... Indicates that the basin temperature has not reached the programmed minimum

B Dose Error ..... Alarm indicting the SSG Part B dosing reservoir has timed out and not all chemistry was delivered

Clear Sys Alarm? ..... Diagnostic 70: prompts the user to press the enter button to clear a system alarm (such as a NVRAM error)

Flash High Error ..... Indicates that the high code flash CRC test did not pass

Flash Low Error ..... Indicates that the low code flash CRC test did not pass

Flo Disabled..... Indicates that the fluid flow sensor was disabled

Flow Sen Err..... Indicates that the flow sensor is reporting flow at the start of a cycle (no flow should be occurring)

Flow 2 Sen Err..... (SSG only) alarm indicating that the chamber fluid flow sensor is reporting flow at the start of the cycle (no flow should be occurring)

HLD Sampl Er ..... Alarm indicating that a disinfectant sample port sensor is reading incorrectly

Lid ajar ..... Indicates that the cover (lid) is open during a cycle

Lid Disabled..... Indicates that the cover (lid) opened sensor was disabled

Low Alcohol ..... Indicates that the alcohol level is low

Low Chamber ..... Indicates that the basin level did not reach the level sensor in time

Low Det. ..... Indicates that the detergent level is low

No Air Flow ..... Indicates that no air flow was detected

No Fluid Flo ..... Indicates that no fluid flow was detected

No Fluid Fl2 ..... (SSG only) alarm indicating that no fluid flow was detected by the 3.2 l/min chamber fluid sensor during the mixing of the disinfectant.

NVRAM Err..... Non-Volatile RAM error, can only be cleared in Diagnostics 70

Power on ..... Indicates that the device lost power during a cycle

RAM Error..... RAM error, can only be cleared in Diagnostics 70

Res T High ..... Indicates that the incoming water temperature has exceeded the maximum

Res T Low..... Indicates that the temperature of the incoming water is below the minimum for safe disinfection

Reset Alarms? ..... Prompts the user to press the enter button to cancel an alarm

Sheath Fail ..... Indicates that the sheath test failed

Shth Sen Err ..... Indicates that the sheet tester measured pressure at the start of a cycle

SNVRAM Err..... Short Non-Volatile RAM error, can only be cleared in Diagnostics 70

SSG A low..... Alarm indicating that the SSG has timed out before filling part A reservoir (Part A chemistry low)

SSG B low.....Alarm indicating that the SSG has timed out before filling part B reservoir (Part B chemistry low)

SSG A Sen Er .....Alarm indicating that the SSG dosing reservoir A sensors are reading incorrectly (sensor hardware error)

SSG B Sen Er.....Alarm indicating that the SSG dosing reservoir B sensors are reading incorrectly (sensor hardware error)

SSG Cmd Err.....Alarm indicating that the SSG has received an unknown command from the DSD (software error?)

SSG Comm Err.....Alarm indicating that the SSG detected a failure in the DSD Communications

SSG CRC Fail Alarm indicating that the SSG failed its internal Software Checksum test (program not functioning correctly)

SSG Data Er..... Alarm indicating that the SSG Database was out of range. DSD and SSG data do not match.

SSG Dose Err ..... Alarm indicating that the SSG is not indicating completion prior to DSD step advancing (SSG lost database or program step error)

SSG Fill Err ..... Alarm indicating that the DSD has advanced to the next step prior to SSG fill completion (program step error)

SSG HW Err ..... Alarm indicating that the SSG has experienced a hardware error (includes capacitive sensor missing)

SSG Missing ..... Alarm indicating the DSD detected a failure in the SSG Communication (DSD doesn't see the SSG)

SSG Rsvr Err..... Alarm indicating that an SSG dosing reservoir sensor has remained high (not empty) after disinfect cycle

Sta Not Idle..... Indicates that the selected operation can not be performed because the station is not currently idle

Sth Disabled ..... Indicates that the sheath (leak) tester was disabled

Task Unfin..... Alarm indicating that the SSG is reporting a Task Not Finished Error ; fill or dose did not complete

Time Err..... Time base error, can only be cleared in Diagnostics 70

Diagnostic Messages

Adjust Alarm ..... Diagnostic 27: prompts the user to adjust the alarm volume.

Air Sen Enable ..... Diagnostic 40: prompts the user to enable / disable the air flow sensor.

Alc. Sen Enable..... Diagnostic 47: prompts the user to enable / disabled the alcohol level sensor.

Auto Dis. Option..... Diagnostic 88: prompts the user to enable / disable the waterline disinfect option.

Bas. Temp Enable ..... Diagnostic 49: prompts the user to enable / disable the basin temperature sensor.

Basin Sen Enable..... Diagnostic 42: prompts the user to enable / disable the basin level sensor.

Basin Temp. Cal ..... Diagnostic 31: indicates that the DSD is in basin calibration mode.

Contrast adj ..... Diagnostic 26: prompts the user to press the enter button to adjust the LCD contrast.

Count down from..... Diagnostic 24: indicates that the DSD is performing a counter test.

CVR Sen Enable ..... Diagnostic 41: prompts the user to enable / disable the cover (lid) open sensor.

Cycle Count ..... Diagnostic 91: indicates that the DSD total cycle counts are being displayed.

Det. Sen Enable ..... Diagnostic 48: prompts the user to enable / disable the detergent level sensor.

Diagnostics..... Indicates that the DSD is in diagnostic mode.

FLO Sen Enable ..... Diagnostic 40: prompts the user to enable / disable the fluid flow sensor.

Heat Option..... Diagnostic 88: prompts the user to enable / disable the heated reservoir option.
Always set to 0 on the DSD EDGE® Endoscope Reprocessor

Input Code ..... Prompts the user to enter the diagnostic entry password.

Input S/N major ..... Diagnostic 82: prompts the user to enter the most significant two digits of the serial number.

Input S/N minor ..... Diagnostic 82: prompts the user to enter the least significant two digits of the serial number.

Key Code ..... Diagnostic 25: indicates that the following number is the ID number of the key just pressed.

Language ..... Diagnostic 80: prompts the user to select a user language.

Max dis..... Diagnostic 71: Prompts the user to enter the maximum number of disinfectant cycles allowed.

Max. Bas. Temp ..... Diagnostic 74: Prompts the user to enter the maximum water temperature allowed

Min. Bas. Temp ..... Diagnostic 75: Prompts the user to enter the minimum temperature the basin has to be for disinfection.

Previous Key..... Diagnostic 25: indicates that the following number is the ID number of the key pressed before.

Prog. Flash?..... Diagnostic 85: prompts the user to press the enter button to start programming.

Programming..... Diagnostic 85: indicates that the program update is in progress.

Recirc Option ..... Diagnostic 88: prompts the user to enable / disable the recirculation option.

Res High Temp En..... Diagnostic 49: prompts the user to enable / disable the water high temperature monitor.

Res Low Enable ..... Diagnostic 43: prompts the user to enable / disable the low reservoir sensor.
Must be set to 0 on the DSD EDGE Endoscope Reprocessor

Res Low Temp En ..... Diagnostic 49: prompts the user to enable / disable the water low temperature monitor.

Res. Temp. Cal. ..... Diagnostic 32: indicates that the DSD is in water calibration mode.

Reset programs? ..... Diagnostic 72: prompts the user to press the enter button to clear all user programs.

Set A purge Secs . ..... Diagnostic 63: prompts the user to enter the air purge time in seconds.

Set D Drain Secs..... Diagnostic 61: prompts the user to enter the disinfectant drain time in seconds.

Set D Fill Secs ..... Diagnostic 62: prompts the user to enter the disinfectant fill time in seconds.

Set D Pulse Secs ..... Diagnostic 64: prompts the user to enter the disinfectant pulse time in seconds.

Set D Top Secs..... Diagnostic 67: prompts the user to enter the disinfectant top-off time in seconds.

Set Dis. Hold ..... Diagnostic 69: prompts the user to enter the water line disinfectant hold time in hours and minutes.

Set Extra Air..... Diagnostic 65: prompts the user to enter the add extra air time in seconds.

Set F purge Secs ..... Diagnostic 63: prompts the user to enter the fluid purge time in seconds.

Set Idle State? ..... Diagnostic 89: prompts the user to press the enter button to jump to the idle state.

Set P Drain Secs..... Diagnostic 66: prompts the user to enter the short rinse partial drain time in seconds.

Set P Fill Secs ..... Diagnostic 66: prompts the user to enter the short rinse partial fill time in seconds.

Set R Drain Secs..... Diagnostic 61: prompts the user to enter the rinse drain time in seconds.

Set R Fill Secs..... Diagnostic 62: prompts the user to enter the rinse fill time in seconds.

Set R Rinse Secs ..... Diagnostic 68: prompts the user to enter the short rinse recirc time in seconds.

Set R Top Secs ..... Diagnostic 67: prompts the user to enter the rinse top-off time in seconds.

Set Temp. to 10C ..... Diagnostic 31 and 32: prompts the user to set the thermistor to 10C.

Set Temp. to 30C ..... Diagnostic 31: prompts the user to set the thermistor to 30C.

Shth Sen Enable ..... Diagnostic 45: prompts the user to enable / disable the sheath (leak) tester option.

Temp Option ..... Diagnostic 88: prompts the user to enable / disable the temperature monitoring option.

Testing Sensors ..... Diagnostic 94: indicates that the current sensor values are being displayed.

Time Limit ..... Diagnostic 81: prompts the user to enter the programmable time limits.

Log Messages

Add Air ..... Indicates that an add air cycle was run.

Add Air On..... Indicates that as Add Air cycle will be added at the end of the current cycle.

Add Air Off ..... Indicates that as Add Air cycle will not be added at the end of the current cycle.

Air ..... Notes when the air portion of a cycle occurred.

Auto Dis..... Indicates that an auto water line disinfectant cycle was run.

Disinfect ..... Notes when the disinfectant portion of a cycle occurred.

HLD Fail..... Log message indicating disinfectant efficacy has passed MRC test.

HLD Pass ..... Log message indicating disinfectant efficacy has failed MRC test.

Low Alcohol ..... Indicates that the alcohol level is low.

Machine ID ..... The serial number of the DSD-201.

No Air Flow ..... Indicates that no air flow was detected.

No Fluid Flo..... Indicates that no fluid flow was detected.

Power on ..... Indicates that the device lost power during a cycle.

Resume ..... Indicates when a cycle was resumed.

Rinse 1 ..... Notes when the Rinse 1 portion of a cycle occurred.

Rinse 2 ..... Notes when the Rinse 2 portion of a cycle occurred.

Rinse 3 ..... Notes when the Rinse 3 portion of a cycle occurred.

S/N ..... Indicates the machine serial number.

Sheath Fail..... Indicates that the sheet test failed.

Sheath Test..... Notes when the sheath test portion of a cycle occurred.

Shth Sen Err..... Indicates that the sheet tester measured pressure at the start of a cycle.

Start ..... Indicates when a cycle was started.

Sth Disabled ..... Indicates that the sheath (leak) tester was disabled.

Stop..... Indicates when a cycle was manually stopped.

Temp =..... Indicates the basin temperature at the beginning and end of the disinfect phase.

Water T High ..... Incoming water temperature exceeding maximum allowed.

Water T Low..... Incoming water pump below the minimum around

Glossary of Terms

basin..... chamber into which the endoscope is placed for disinfection.

cleaning..... physical removal of organic debris from an endoscope.

control panel..... operator interface used to program and operate the reprocessor.

custom program ..... disinfection program other than the default program.

cycle..... sequence of phases in the disinfection process: detergent flush, basin fill, disinfection, rinse, alcohol purge, and air purge.

default program ..... disinfection cycle program supplied with the reprocessor.

disinfection procedure..... pre-programmed series of phases that collectively constitute a specified disinfection protocol function any operation other than a disinfection program, example: disinfectant dump function.

high-level disinfection..... process defined by the CDC that destroys all vegetative bacteria, viruses, and fungi, but not necessarily all bacterial endospores.

idle state..... standby operating state during which no program cycles or other functions are in progress.

MRC..... Minimum Recommended Concentration.

phase..... specific portion of a disinfection cycle.

reservoir ..... container that holds disinfectant, alcohol, or detergent.

restrictor adapter ..... used to simulate a scope during certain operations. This part is supplied with the reprocessor installation kit.

running state ..... operating state during which a program is in progress, or some other function is occurring (i.e., any state other than idle or stop).

station ..... part of the system used to disinfect a single endoscope. The station includes the basin, fluid reservoir, valves, hoses, pump, and compressor.

status indicator..... blinking symbol on the control panel display indicating the current operating state.

status log..... stored record of recent disinfection cycles containing usage history, error status, and processed endoscope serial numbers.

stop state..... operating state during which a disinfection protocol is in progress, but the current cycle is suspended.

SSG ..... Sign Shot Generator

Specifications

Chassis Dimensions (height x width x depth) Height with lid open	48x36x21 inches (122x91x53 cm) 64 inches (162.5 cm)
Weight (approx.)	400 lbs. (181 kg)
Power Cord	Hospital grade – 6 feet
Altitude	<15,000 feet (4,572m)
Humidity	20% to 80%, non-condensing
Temperature	80°F ± 20°F (27°C ± 10°C)
Mains Supply Voltage Fluctuations	Not to exceed ±10% of the nominal voltage
Classification	I, Ordinary Protection
Electrical Requirements	230 VAC 50 Hz, 1440 WATTS, Single Phase 120 VAC 60 Hz, 1440 WATTS, Single Phase Accessory Outlet: 230 VAC or 120 VAC depending on unit configuration
Water Requirements	The water supply must be connected to and have the means of providing a water temperature of 95°F (±4°) 35°C (±2°). Ensure water hardness is less than 12 gpg (200 ppm) for optimal performance. Water pressure 35-40 psi at 3.2 gpm/min
Water Consumption	Approx. 7.5 gallons (28 liters) per cycle
Designed for Use	Indoor
Environmental Rating	Standard
Pollution Degree	2
Mode of Operation	Continuous
Degree of Mobility	Stationary
Waste Drain	The reprocessors drain is 25 inches (60cm) above the floor. The facility drain must be no higher than 18". Because the reprocessor uses a gravity system there must be at least a 3 inch (25mm) drop from the reprocessor over 36 inches (30cm) for proper draining.
Capacities	Part A & B containers: 5 Liters Basin: 13 liters. Alcohol and detergent reservoirs: 800ml each
Disinfectant Compatibilities	RAPICIDE® PA
Safety	Conforms to UL STD 61010-1, ENSTD 61010-1, Certified to CSA STAD C22.2 No. 61010.1
EMC	Tested to IEC 60601-1-2

Disinfection Cycle Chart

Legend

Factory Set: These settings can be changed by accessing the Diagnostics Menu.

Hard Coded: These setting cannot be changed.

User Programmable: These setting can be changed by the user without accessing the Diagnostics Menu.

Phase	Option	Description	Default	Typical	Min. Limit	Max. Limit	Setting	State #	Function #
Start-up	Leak	Inflate scope with air	20 sec	20 sec			Hard Coded	3	
		Test for major air leak in the scope	20 sec	20 sec			Hard Coded	4	
Flush		Detergent injection	3 sec	3 sec	0 sec	59 sec	User programmable	16	Setup 5 Detergent Inject
		Endoscope channel flush with detergent and water	30 sec	30 sec	0 sec	99m:59s	User programmable	17	Setup 5 Flush
		Air purge through chamber line	5 sec	5 SEC			Hard Coded	92	
		Endoscope channel air purge	30 sec	30 sec	0 sec	999 sec	Factory Set	94	Diag. 63
		Clear air lines	5 sec	5 sec			Hard Coded	95	
Wash Soak		Detergent injection	3 sec	3 sec	0 sec	59 sec	User programmable	7	Setup 5 Detergent Inject
		Endoscope channel flush with detergent and water	30 sec	30 sec			Hard Coded	118	
		Basin fill minimum (level sensor ignored)	90 sec	90 sec	0	999 sec	Factory Set	119	Diag 62
		Basin fill balance (sensor monitored)	5 min	10 sec			Hard Coded	120	
		Top off	30 sec	30 sec	0 sec	999 sec	Factory Set	121	Diag. 67
		Scope soaks in the basin. Basin fluid circulates through channels	60 sec	60 sec	0 sec	99m:59s	User programmable	122	Setup 5 Soak
		Drains the basin while flushing the scope channels	90 sec	90 sec	0 sec	999 sec	Factory Set	96	Diag 61
		Drains the rest of the fluid	30 sec	30 sec			Hard Coded	97	
		Air purge through chamber line	5 sec	5 sec			Hard Coded	92	
		Air purge through re-circulation lines	10 sec	10 sec			Hard Coded	93	
		Endoscope channel air purge	30 sec	30 sec	0 sec	999 sec	Factory Set	94	Diag 63
		Clear air lines	5 sec	5 sec			Hard Coded	95	

Phase	Option	Description	Default	Typical	Min. Limit	Max. Limit	Setting	State #	Function #
Rinse Soak		Endoscope channel flush	30 sec	30 sec			Hard Coded	9	
		Basin fill minimum (level sensor ignored)	90 sec	90 sec	0 sec	999 sec	Factory Set	111	Diag 62
		Basin fill balance (sensor monitored	5 min	10 sec			Hard Coded	112	
		Top off	30 sec	30 sec	0 sec	999 sec	Factory Set	113	Diag. 67
		Water flows through scope channels or recirculation is active	60 sec	60 sec	0 sec	99m:59s	User programmable	114	Setup 5 Soak Rinse
		Drains the basin while flushing the scope channels	60 sec	60 sec	0 sec	999 sec	Factory Set	96	Diag. 61`
		Drains the rest of the fluid	90 sec	90 sec			Hard Coded	97	
		Air purge through chamber line	5 sec	5 sec			Hard Coded	92	
		Air purge through re-circulation lines	10 sec	10 sec			Hard Coded	93	
		Endoscope channel air purge	30 sec	30 sec	0 sec	999 sec	Factory Set	94	Diag. 63
		Clean air lines	5 sec	5 sec			Hard Coded	29	
Disinfect		Finish Filling Chemical Reservoirs	150	0			Hard Coded	32	
		Fill Basin with Water for 30 sec	30 sec	30 sec			Hard Coded	33	
		Fill and Dose Chemistry	120 sec	40 sec			Hard Coded	34	
		Circulate through Chamber Valve	30 sec	30 sec			Hard Coded	35	
		Circulate through Endoscope Channels	60 sec	60 sec			Hard Coded	36	
		Fill to Basin Sensor	300	30 sec			Hard Coded	37	
		Top off	30 sec	30 sec			Factory Set	38	Diag. 57
		Mix	30 sec	30 sec			Hard Coded	39	
		Disinfection Contact Time	5 min	5 min			Hard Coded	40	
		Collect Disinfectant Sample	7 sec	7 sec			Hard Coded	41	
		Drain	100 sec	100 sec	0 sec	999 sec	Factory Set	42	Drain Diag. 61
		Purge Disinfectant Pump	10 sec	10 sec			Hard Coded	43	
		Air purge through chamber lines	5 sec	5 sec			Hard Coded	107	
		Air purge through recirculation lines	10 sec	10 sec			Hard Coded	108	
		Endoscope Channel Air Purge	30 sec	30 sec	0 sec	999 sec	Factory Set	109	A purge Diag. 63
		Clear Air Lines	5 sec	5 sec			Hard Coded	110	
Rinse 1		Flush endoscope channels while draining	30 sec	30 sec	0 sec	999 sec	Factory Set	46	Diag. 63
		Partially fill the basin with water	30 sec	30 sec	0 sec	999 sec	Factory Set	47	Diag. 66
		Partial drain time	30 sec	30 sec	0 sec	999 sec	Factory Set	49	Diag. 66
		Basin fill minimum (level sensor ignored)	90 sec	90 sec	0 sec	999 sec	Factory Set	111	Diag. 62
		Basin fill balance (sensor monitored)	5 min	10 sec			Hard Coded	112	
		Top off	30 sec	30 sec	0 sec	999 sec	Factory Set	113	Diag. 67
		Replenish with fresh water	30 min	30 min	30 min	99m:59s	User programmable	114	Setup 5 Rinse 1
		Drain the basin while flushing the scope channels	90 sec	90 sec	0 sec	999 sec	Factory Set	96	Diag. 61
		Drain	30 sec	30 sec			Hard Coded	97	
		Air purge through chamber line	5 sec	5 sec			Hard Coded	92	
		Endoscope channel air purge	30 sec	30 sec	0 sec	999 sec	Factory Set	94	Diag. 63
		Clear air lines	5 sec	5 sec			Hard Coded	95	

Phase	Option	Description	Default	Typical	Min. Limit	Max. Limit	Setting	State #	Function #
Rinse 2		Endoscope channel flush with water	30 sec	30 sec	0 sec	999 sec	Factory Set	51	Diag. 63
		Basin fill minimum (level sensor not monitored)	90 sec	90 sec*	0 sec	999 sec	Factory Set	100	Diag. 62
		Basin fill balance (sensor monitored)	5 min	10 sec*			Hard Coded	101	
		Top off	30 sec	30 sec	0 sec	999 sec	Factory Set	102	Diag. 67
		Replenish with fresh water	0 sec	0 sec	0 sec	99m:59s	User Set	103	Setup 5 Rinse 2
		Drain the basin while flushing the scope channels	30 sec	30 sec	0 sec	999 sec	Factory Set	96	Diag. 61
		Drain	30 sec	30 sec			Hard Coded	97	
		Air purge through chamber line	5 sec	5 sec			Hard Coded	92	
		Endoscope channel air purge	30 sec	30 sec	0 sec	999 sec	Factory Set	94	Diag. 63
		Clear air lines	5 sec	5 sec			Hard Coded	95	
Rinse 3		Endoscope channel flush with water	30 sec	30 sec	0 sec	999 sec	Factory Set	53	Diag. 63
		Basin fill minimum (level sensor not monitored)	90 sec	90 sec*	0 sec	999 sec	Factory Set	100	Diag. 62
		Basin fill balance (sensor monitored)	5 min	10 sec*			Hard Coded	101	
		Top off	30 sec	30 sec	0 sec	999 sec	Factory Set	102	Diag. 67
		Replenish with fresh water	0 sec	0 sec	0 sec	99m:59s	User Set	103	Setup 5 Rinse 2
		Drain the basin while flushing the scope channels	30 sec	30 sec	0 sec	999 sec	Factory Set	96	Diag. 61
		Drain	30 sec	30 sec			Hard Coded	97	
		Air purge through chamber line	5 sec	5 sec			Hard Coded	92	
		Endoscope channel air purge	30 sec	30 sec	0 sec	999 sec	Factory Set	94	Diag. 63
		Clear air lines	5 sec	5 sec			Hard Coded	95	
Alcohol		Alcohol dispensing into manifold	10 sec	10 sec	0 sec	59 sec	User Set	55	Setup 5 Alcohol Inject
		Endoscope channel alcohol purge	0 sec	0 sec	0 sec	99m:59s	User Set	56	Setup 5 Alcohol
		Clear air lines	5 sec	5 sec			Hard Coded	57	
Air		Air purge through chamber lines	5 sec	5 sec			Hard Coded	58	
		Endoscope channel air purge	3 min	3 min	0 sec	99m:59s	User Set	60	Setup 5 Air
		Clear air lines	5 sec	5 sec			Hard Coded	61	

1 - The time in the Typical column where an * symbol is indicated, is subject to how fast the basin fills. An alarm will occur when default time is reached.

2 - Selecting zero time during Setup 5 will cancel all accompanying states in the phase.

3 - The “FLUSH” message is displayed in the Phase column indicates that the state is only active when the SOAK time is set to zero.

4 - States with a leak test option are active if the unit is provided with the Leak Tester and the sheath sensor is enabled in the diagnostics mode.

Custom Program Reference Chart

Complete the chart as a reference for custom program settings.

Phase	Program 0 (default)	Program 1	Program 2	Program 3	Program 4
Flush	00:30				
Soak	00:00				
Soak Rinse	00:00				
Detergent Inject	00:00				
Rinse 1	00:30				
Rinse 2	00:00				
Rinse 3	00:00				
Alcohol	00:00				
Alcohol Inject	00:03				
Air Dry	01:00				

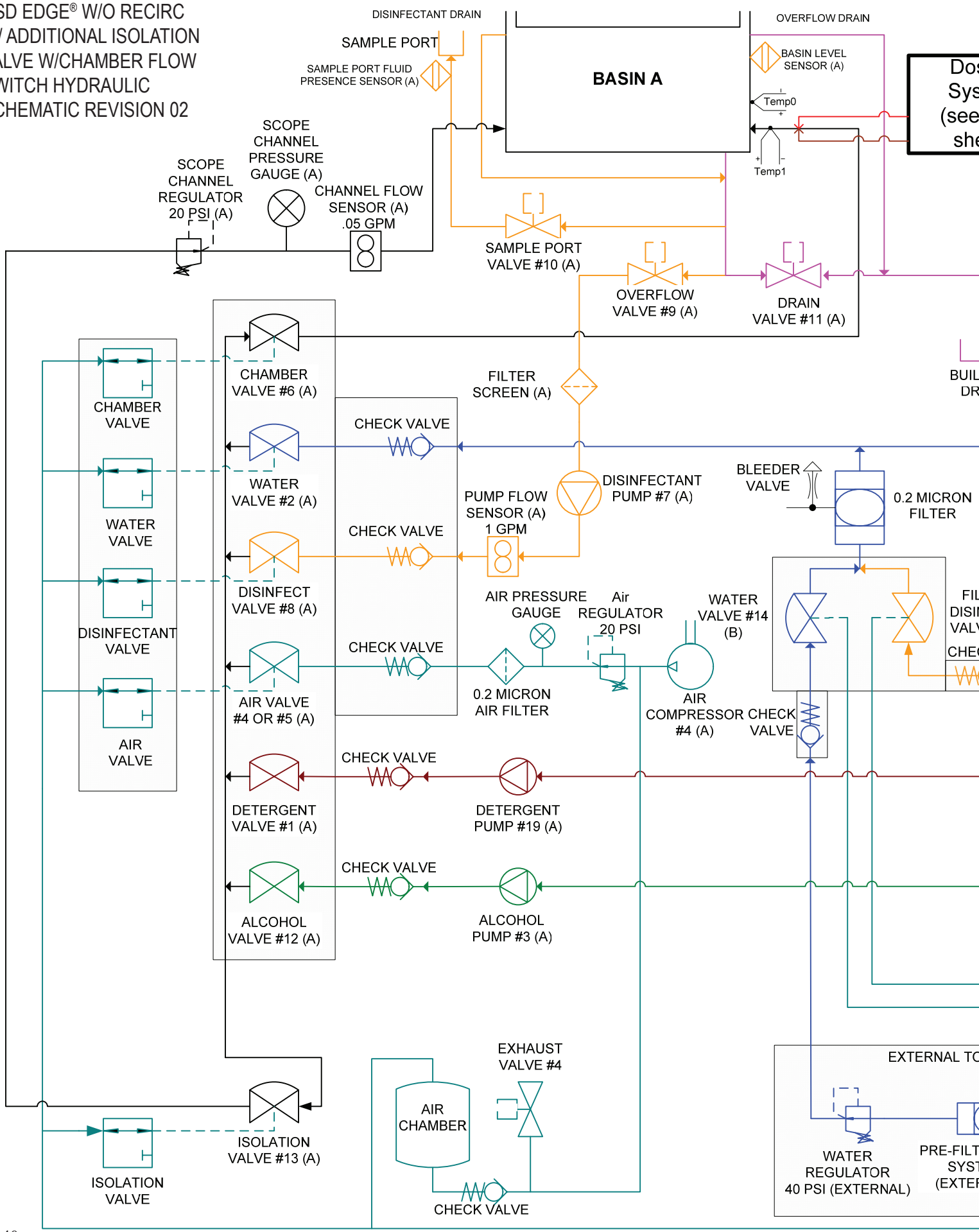
Phase	Program 5	Program 6	Program 7	Program 8	Program 9
Flush					
Soak					
Soak Rinse					
Detergent Inject					
Rinse 1					
Rinse 2					
Rinse 3					
Alcohol					
Alcohol Inject					
Air Dry					

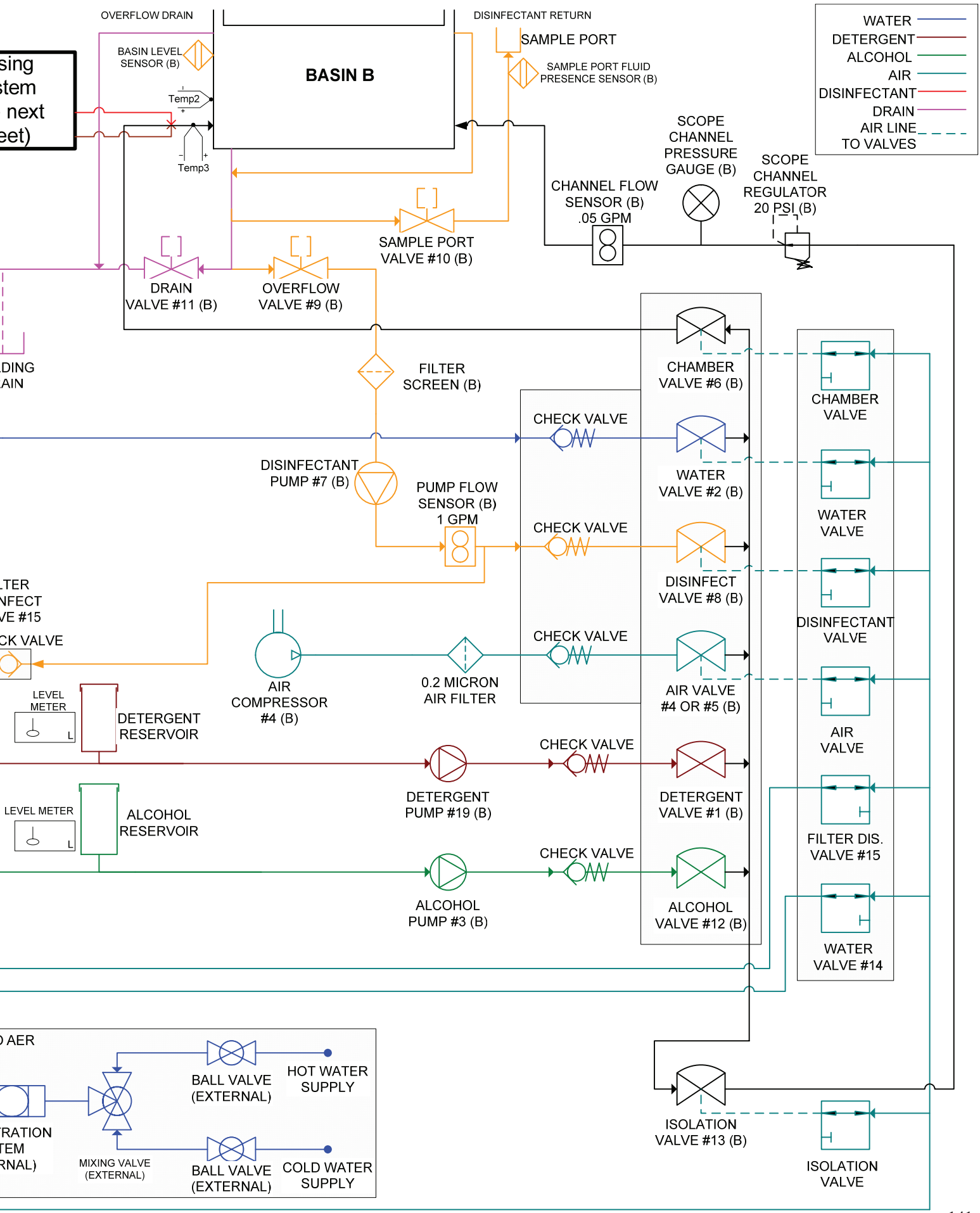
Setups

DSD EDGE® Endoscope Reprocessor Setup Functions (Ver. 5.65, 5/30/10)

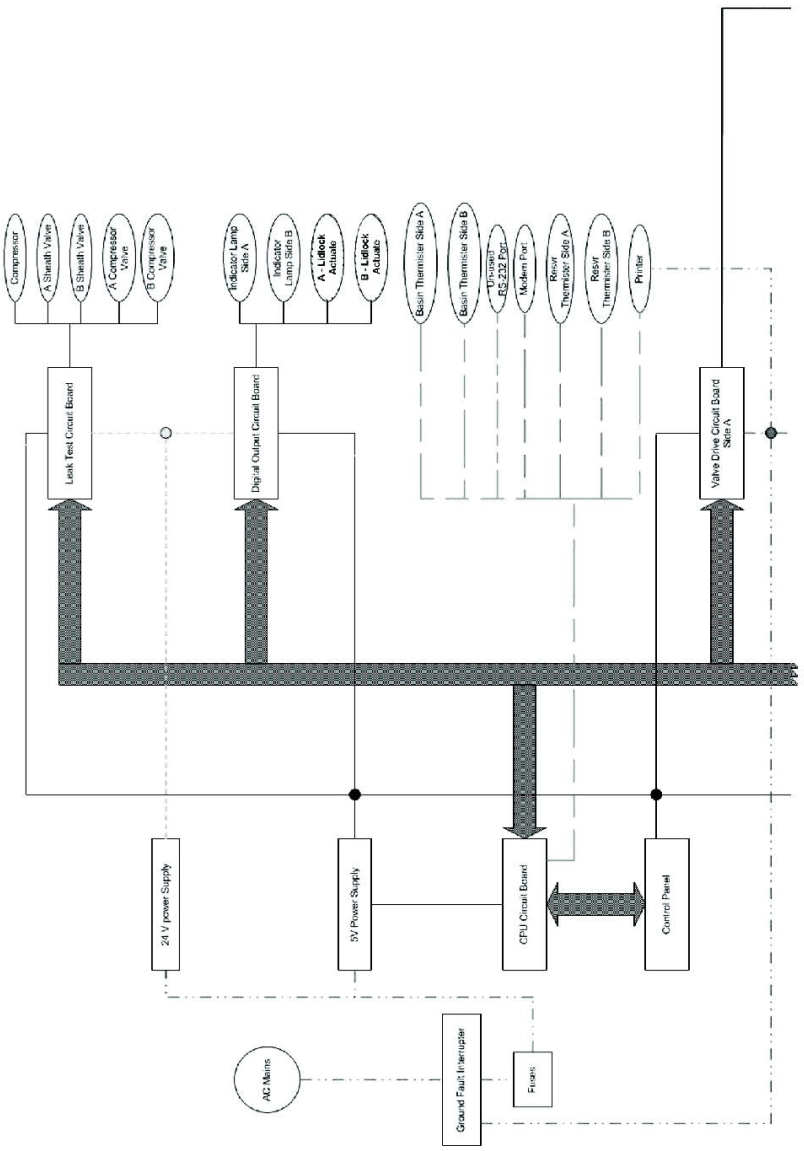
Setup	Functions
2	Set Date
3	Set Time
4	Display Software Version
5	Input Program
6	Waterline Disinfect
7	Disinfectant Warning Inhibit
8	Display Log Information
9	Inhibit Logging
10	Clear Log
11	Clear Run Counter
13	Display Temperatures
16	Display Disinfectant Count
17	Display State Remaining
18	Display State Time
21	Print Entire Log
22	Clear Entire Print Queue
25	Print Last Run
27	Disable Weekend Delayed Starts
28	Set Delayed Start Time
29	Set Delayed Start Enable
33	Set Automatic Printing Enable
41	Incoming Water Temperature Test
42	Display State Time and Time Remaining
43	Turn on Water Inlet Valve (at end of auto-disinfect)
88	Enter Diagnostics

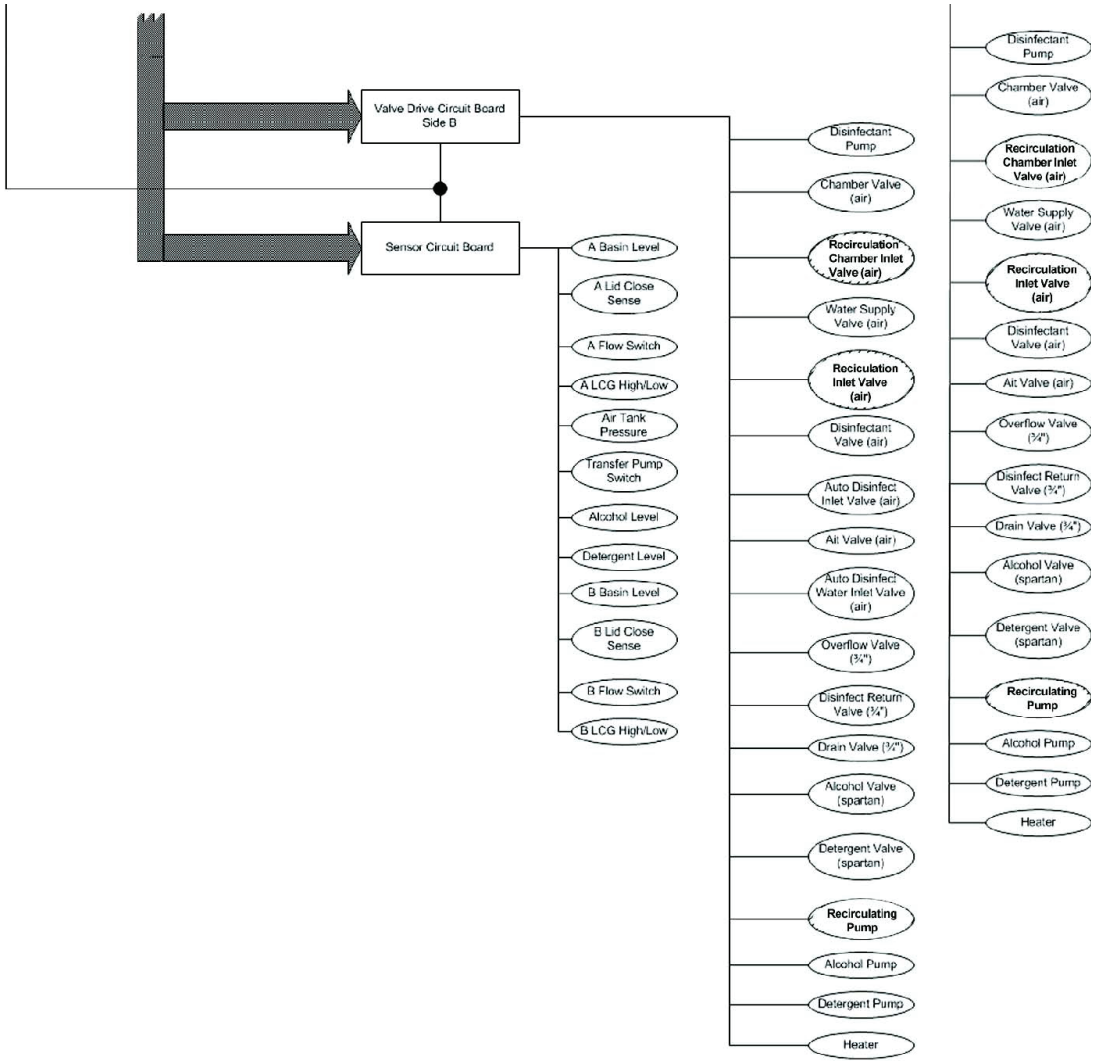
DSD EDGE® W/O RECIRC
W/ ADDITIONAL ISOLATION
VALVE W/CHAMBER FLOW
SWITCH HYDRAULIC
SCHEMATIC REVISION 02




WATER
DETERGENT
ALCOHOL
AIR
DISINFECTANT
DRAIN
AIR LINE TO VALVES
OVERFLOW DRAIN
BASIN LEVEL SENSOR (B)
BASIN B
Temp2
Temp3
DISINFECTANT RETURN
SAMPLE PORT
SAMPLE PORT FLUID PRESENCE SENSOR (B)
SCOPE CHANNEL PRESSURE GAUGE (B)
SCOPE CHANNEL REGULATOR 20 PSI (B)
CHANNEL FLOW SENSOR (B) .05 GPM
SAMPLE PORT VALVE #10 (B)
DRAIN VALVE #11 (B)
OVERFLOW VALVE #9 (B)
FILTER SCREEN (B)
CHAMBER VALVE #6 (B)
CHAMBER VALVE
CHECK VALVE
WATER VALVE #2 (B)
WATER VALVE
DISINFECTANT PUMP #7 (B)
PUMP FLOW SENSOR (B) 1 GPM
CHECK VALVE
DISINFECT VALVE #8 (B)
DISINFECTANT VALVE
CHECK VALVE
AIR COMPRESSOR #4 (B)
0.2 MICRON AIR FILTER
AIR VALVE #4 OR #5 (B)
AIR VALVE
LEVEL METER
DETERGENT RESERVOIR
CHECK VALVE
DETERGENT PUMP #19 (B)
DETERGENT VALVE #1 (B)
FILTER DIS. VALVE #15
LEVEL METER
ALCOHOL RESERVOIR
CHECK VALVE
ALCOHOL PUMP #3 (B)
ALCOHOL VALVE #12 (B)
WATER VALVE #14
BALL VALVE (EXTERNAL)
HOT WATER SUPPLY
MIXING VALVE (EXTERNAL)
BALL VALVE (EXTERNAL)
COLD WATER SUPPLY
ISOLATION VALVE #13 (B)
ISOLATION VALVE

Electrical Block Diagram DSD 201




Valve Drive Circuit Board Side B
Sensor Circuit Board
A Basin Level
A Lid Close Sense
A Flow Switch
A LCG High/Low
Air Tank Pressure
Transfer Pump Switch
Alcohol Level
Detergent Level
B Basin Level
B Lid Close Sense
B Flow Switch
B LCG High/Low
Disinfectant Pump
Chamber Valve (air)
Recirculation Chamber Inlet Valve (air)
Water Supply Valve (air)
Recirculation Inlet Valve (air)
Disinfectant Valve (air)
Air Valve (air)
Auto Disinfect Inlet Valve (air)
Auto Disinfect Water Inlet Valve (air)
Overflow Valve (¾")
Disinfect Return Valve (¾")
Drain Valve (¾")
Alcohol Valve (spartan)
Detergent Valve (spartan)
Recirculating Pump
Alcohol Pump
Detergent Pump
Heater
Disinfectant Pump
Chamber Valve (air)
Recirculation Chamber Inlet Valve (air)
Water Supply Valve (air)
Recirculation Inlet Valve (air)
Disinfectant Valve (air)
Air Valve (air)
Overflow Valve (¾")
Disinfect Return Valve (¾")
Drain Valve (¾")
Alcohol Valve (spartan)
Detergent Valve (spartan)
Recirculating Pump
Alcohol Pump
Detergent Pump
Heater

Diagnostic Functions

Setup Function

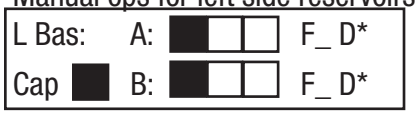
Manual valve control sub-menu

0: Shut all valves and turn off all motors
1: Activate Detergent Valve
2: Activate Water Valve
3: Activate Alcohol Pump
4: Activate Air System (Compressor and Valve)
5: Activate Air Valve
6: Activate Chamber Valve
7; Activate Disinfectant Pump System (incl. 8 and 9)
8: Activate Disinfect Supply Valve
9: Activate Disinfect Overflow Valve
10: Activate Disinfect Return Valve
11: Activate Drain Valve
12: Activate Alcohol Valve
13: Activate Isolation Valve
14: Activate Water Inlet Valve
15: Activate Disinfectant Inlet Valve
16: Activate Recirc. Inlet Valve
17: Activate Recirc. Chamber Valve
18: Simultaneously Activate Valves
19: Activate Detergent Pump
20: Activate Station A LED's
21: Activate Station B LED's
22: Activate System LED's
23: LCD Test Pattern
24: Write Counter to Display
25: Test Keyboard
26: Adjust LCD Contrast
27: Adjust Alarm Volume
28: Lock Cover
29: Unlock Cover
30: Display State Stack Data
31: Calibrate Basin Temp
32: Calibrate Reservoir Temp

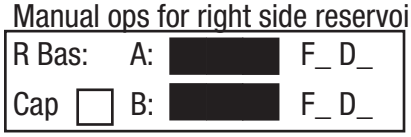
Diagnostic Functions *(continued)*

37: SSG sub-menu

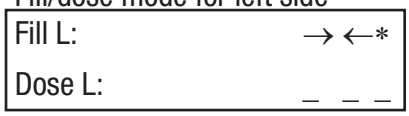
1: Manual ops for left side reservoirs



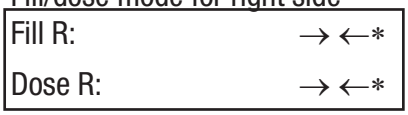
2: Manual ops for right side reservoirs



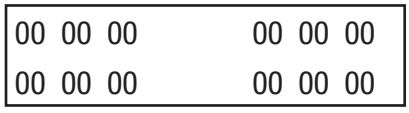
3: Fill/dose mode for left side



4: Fill/dose mode for right side



10: Display SSG status registers / activate this sub-menu from setup 37



40: Flow Sense Enable
41: Cover Sense Enable
42: Basin Level Sensor Enable
43: Reservoir Low & High Level Sensor Enable
45: Sheath Sense Enable
46: Disinfectant Warning Inhibit
47: Set Alcohol Sensor Enable
48: Set Detergent Sensor Enable
49: Set Temperature Monitor Enables
50: Turn Test Off (Need Sheath Tester Fixture)
51: Activate Sheath Valve
52: Activate Compressor Valve
53: Activate Compressor
54: Turn off all valves and reset latches
55: Turn off compressor
56: Activate Sheath Test (need sheath tester fixture)
57: Activate Sheath Hold (need sheath tester fixture)
60: Set Default Program
61: Ser Drain Times
62: Set Fill Times
63: Set Purge Times
64: Set Disinfectant Pulse Time
65: Set Add Air Time

Diagnostic Functions *(continued)*

Setup	Function
66:	Set Partial Rinse Time
67:	Set Topoff Times
68:	Set Recirc Rinse Time
69:	Set Automatic Disinfect Hold Time
70:	Reset System Alarm
71:	Set Maximum Disinfectant Count
72:	Reset Programs
73:	Clear Disinfectant Counter
74:	Sex Maximum Basin Water Temp
75:	Set Minimum Basin Temp
76:	Enable Restart Cycle
77:	Disable Restart Cycle
78:	Enable Autoline Disinfect delayed start
79:	Enable All Sensors - except SSG sensors
80:	Set Language
81:	Set Time Limit
82:	Set Serial Number
83:	Program Low Flash
84:	Program Low Flash
85:	Program High Flash
86:	Initialize NVRAM
87:	Disable All Sensors
88:	Set Options
89:	Set Idle State
90:	Display Inputs (used for EMC testing)
91:	Display Cycle Count
93:	Display Temps
94:	Test Sensors
95:	Test Sheath Tester
96:	Disinfectant Times
97:	Sanitization Times
98:	Toggle DSD / SSD bit

WARRANTIES

Limited Warranty

Subject to the terms below, Medivators Inc. (the "Company") warrants that its products (the "Products") will conform to the Company's written specifications (where applicable) and will be free from defects in material and workmanship under normal use and service for the following periods (the "Warranty Period"):

Endoscope reprocessors and associated equipment, and Irrigation Pumps: fifteen (15) months from date of shipment from the Company or one (1) year from the date of installation, whichever occurs first.

Consumables, accessories, and Product service parts, including, but not limited to, endoscope hook-ups, filters, printers, printer supplies, test strips, accessory bags, and service parts for products: ninety (90) days from the date of installation or one hundred and twenty (120) days from the date of shipment, whichever occurs first.

Disposable Products: warranted for single use. The Warranty Period will not in any case exceed the expiration date on the Product label.

The warranty does not cover, and the Company will have no warranty obligation whatsoever with respect to, any damage to a Product caused by or associated with: (i) external causes, including without limitation, accident, vandalism, acts-of-God, power failure or electric power surges, (ii) abuse, misuse or neglect of the Product by the customer or use of unauthorized third party filters or other consumables and accessories, (iii) usage not in accordance with product instructions, (iv) the customer's failure to perform required preventive maintenance, or (v) servicing or repair not authorized by the Company.

Limitation of Remedy

The warranty obligation of the Company hereunder is limited to (at its option) (i) the repair or replacement of the defective Products or any parts it deems defective, or (ii) a refund of the purchase price. This will be customer's exclusive remedy for a covered defect.

In order to recover under the warranty, the customer must notify the Company in the state (if in the U.S.A.) or the country of installation, of the defect (describing the problem in reasonable detail) prior to the expiration of the Warranty Period and within thirty (30) days of discovery of the defect. Upon receiving the Company's official "Returned Material Authorization" (RMA), the customer must promptly return the defective part or Product to the Company (or the service center indicated on the RMA), freight and insurance prepaid. The Company will not be responsible for any damage during shipment.

Warranty Disclaimer

THE WARRANTY ABOVE IS THE COMPANY'S ENTIRE WARRANTY OBLIGATION TO THE PURCHASER OF PRODUCTS. IT IS IN LIEU OF ALL OTHER WARRANTIES OF THE COMPANY, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND THE COMPANY DOES NOT REPRESENT OR WARRANT THAT ANY PRODUCT WILL MEET CUSTOMER'S REQUIREMENTS. THE COMPANY'S RESPONSIBILITY FOR DEFECTS IN A PRODUCT IS LIMITED SOLELY TO REPAIR, REPLACEMENT OR REFUND OF THE PURCHASE PRICE AS SET FORTH IN THIS WARRANTY STATEMENT.

TO THE EXTENT PERMITTED BY LAW, THE COMPANY SHALL NOT, UNDER ANY CIRCUMSTANCES, BE LIABLE TO CUSTOMER FOR CONSEQUENTIAL, INCIDENTAL, INDIRECT, PUNITIVE OR SPECIAL DAMAGES OR LOSSES, INCLUDING WITHOUT LIMITATION, DAMAGES ARISING OUT OF OR IN CONNECTION WITH ANY MALFUNCTIONS, DELAYS, LOSS OF PROFIT, INTERRUPTION OF SERVICE, OR LOSS OF BUSINESS OR ANTICIPATORY PROFITS, EVEN IF THE COMPANY HAS BEEN APPRISED OF THE LIKELIHOOD OF SUCH DAMAGES OCCURRING.

This Warranty gives the customer of Products specific legal rights, and customers may also have other rights which vary from jurisdiction to jurisdiction.

In no event shall the Company's liability exceed the original purchase price of the covered Product.

No representative or agent of the Company has any authority to bind the Company to any other representation or warranty with respect to the Products, and the customer accepts the Products subject to all of the terms above.

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